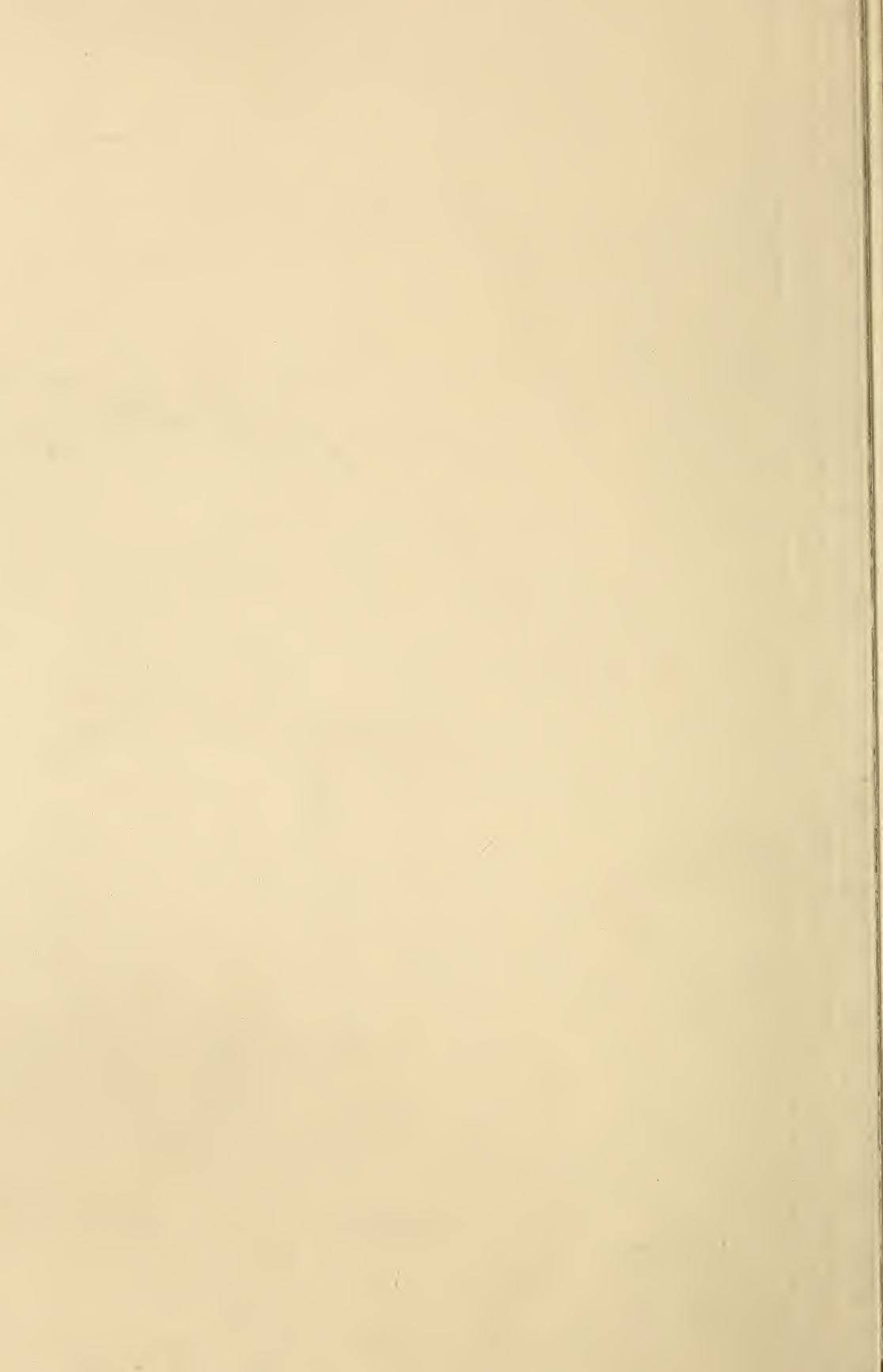


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A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS. GLEANINGSIN THE BEE CULTURE ILLUSTRATED SEMI-MONTHLY Published by THE A. I. ROOT CO. \$1.00 PER YEAR MEDINA, OHIO.

Vol. XXV.

MAY 15, 1897.

No. 10.

STRAY STRAWS FROM DR. C. C. MILLER.

SECTIONS fresh from the factory don't need any wetting before making.

ONE POUND of Root's thin foundation, cut to fill sections full ($3\frac{3}{8} \times 3\frac{3}{8}$), will fill from 92 to 112 sections.

GALLUP reports in *American Bee Journal* that his bees worked on buckwheat six miles away, and didn't seem much exhausted with the journey.

BOTTOM STARTERS have been objected to by some; but I am reassured by the strong indorsement R. C. Aikin gives them, p. 320, and feel just a little proud that I was the "starter" of the plan—at least I *think* I was. [Yes, I think you were the starter.—ED.]

PIOUS MEN are reminded that, if the Lord hears the grace they say at meals, he also hears the comments they make to their wives afterward.—*Atchison Globe*. [That is so—pass the paragraph around. Perhaps its general circulation will lift the plane of Christian living in the heart of many a man.—ED.]

IF SECTIONS must have joints wet before making, use *boiling* water. Use a funnel with a wooden plug that nearly stops it, and have the plug whittled down to a point. Then the fine stream of *hot* water running from the point will run down through the whole box, using little water and wetting only the joint.

BRO. AIKIN, on p. 319 you think the difference in appearance of sections with the dovetailed corner is "not enough to be seriously considered." Your morals must be looked after. When the dovetailed corner is up it has an unpleasant one-sided appearance, and, besides, you can't clean the glue from the dovetails as you can from a plain corner. [What do you say to this, Bro. A.?—ED.]

MR. EDITOR, on page 338 you say you'll cut off $\frac{1}{4}$ inch from each end of your top-bars. I

did that thing, and now wish I had cut off only $\frac{1}{8}$, for I think you'll find the projections of Hoffman top-bars are $\frac{1}{16}$ instead of $\frac{1}{4}$. [If you will turn to the editorial in question you will find that I said *about* $\frac{1}{4}$ inch. For the Dove-tailed hive, $\frac{1}{8}$ is a little more exact than "about $\frac{1}{4}$ inch," and perhaps I should have so stated.—ED.]

APIS DORSATA. The plan of testing their domestication on their own ground, as proposed on p. 839, is just what I have advocated. But I think it's a serious mistake to say, "If they could not be domesticated they might be of advantage in the fertilization of certain flora by letting them run wild in the South." What flora needs fertilization? Wouldn't wild *dorsata* consume honey that without them would go into hives? [Very likely you are right.—ED.]

EXTRA-THIN FOUNDATION has not suited me as well as thin, for two reasons: It sags more, and the bees gnaw it when a lull comes in storing. Now, if drawn foundation doesn't sag, and the bees don't gnaw it, and it can be had as thin as extra-thin foundation, I think I want it. [You do not even now state, doctor, whether the extra-thin foundation that did not suit you as well as the thin was the new or old process. The new process thin is now as thin as the old extra thin.—ED.]

T. F. BINGHAM *may* be right, p. 325, about sections being filled with honey, "half of which has been brought up from the previous year's gathering, to make room for brood," and I think he's in accord with the popular idea; but I'm a little skeptical about it. Before the honey-flow begins, don't the bees empty the cells of honey full faster than they fill them with brood? and when the flow begins don't they carry the *new* product upstairs? Did you ever find buckwheat honey in sections before clover harvest?

"AN OBJECTION to the bent nails" for end-spacing of frames, you say, Mr. Editor, on page 335, "is the difficulty of driving them into position." I take straight nails, drive them in

straight, then bend them after driving. No trick at all. See the sample I sent you some time ago. But I'm going to try the staples, and shall be glad if they prove better than nails. [Yes, it is true that a nail can be bent over; but on account of the spring of the wire the point of the nail generally fails to imbed itself into the end-bar; but staples, if you will try them, you will find to be very much better than nails. With the former the frames will hold their end-spaced position nearly $\frac{3}{8}$ inch above the tin rabbet.—ED.]

OF TEN COLONIES WINTERED OUTDOORS, 80 per cent came through alive. Of the remaining 90 of the same apiary, wintered in cellar, 100 per cent came through alive. Those outdoors were well packed overhead with an extra story beneath, but no packing at sides. The winter was unusually mild. The other two apiaries were wintered in cellar, and all lived except three queenless, and one that (say, Mr. Printer, couldn't you print the next word smaller so it wouldn't be noticed?) starved. [I am surprised that you obtained as good results as you did with your ten colonies outdoors. If they had had packing *all around* I think you would have saved the other colonies, and the other eight would have been stronger. Packed space above is good, but not enough—at least for our locality; and, if I am any judge, the winters are much colder in Marengo than here in Medina. But your results in the cellar were good—very good.—ED.]

PROBABLY T. F. Bingham and B. Walker are both right. Honey to be called "fancy" should be *fancy*, and our fancy grade is so worded as to admit scarcely any honey. One trouble is, that the designation of grades is not strictly honest. When you stop to think carefully about it, you'll not consider the names "fancy" and "No. 1" a very strong testimony to the truthfulness of bee-keepers. [I have been consulting with a number of prominent bee-keepers in regard to the present rules for grading, and it is very evident that they need some slight modification. I believe it is useless to try to get a convention of bee-keepers to fix up a set of rules that will be generally acceptable; and if Bros. York and Hutchinson will go in with me we will take our present rules and make them more nearly what they ought to be. After all, it is the bee-journals that give currency and value to any system of rules that may be adopted.—ED.]

PAPER BETWEEN SHEETS of foundation is a nuisance for *this locality*. It takes an hour to pick the paper out of a 25-pound box, and it must takesome time to put it there, and I don't know of any possible good it does. This year I had one box come without paper, and it came just as nicely as the papered. What's it papered for, anyway? [Our brood foundation is pa-

pered by machinery, and a little later on our thin and extra thin will also be papered in the same way. I am rather of the opinion, however, that there is no very good reason why paper should be used; and why we do is because we are afraid to try the experiment of leaving paper out. While the expense to us is but trifling, we should be very glad to leave it out entirely, if the trade would not object. We should be glad to hear from our readers on this point; and when authorized to do so we will willingly send out shipments without paper, but hardly dare to do it otherwise.—ED.]

ONE REASON why the Rietsche press is so popular in Europe is the amount of adulteration in the foundation that is sold. I'm heartily thankful that we can order foundation, and feel just as certain of its purity as of the water in our wells—perhaps more so. [The foundation-makers of this country know that the adulteration of beeswax for foundation purposes would be bad policy, both financially and morally; and very fortunately, as I have explained, the new Weed automatic sheeting-machine will not handle paraffine or ceresine, even when mixed with beeswax. There is a dental trade that calls for mixtures of beeswax and earth waxes; and in endeavoring to make the Weed sheeter handle such products we found it was worse than a balky horse. Even ten per cent of paraffine with pure beeswax would show itself in the sheets. Bee-keepers can, therefore, depend upon it that the new-process foundation must necessarily be pure, for it can not be new process and be adulterated.—ED.]

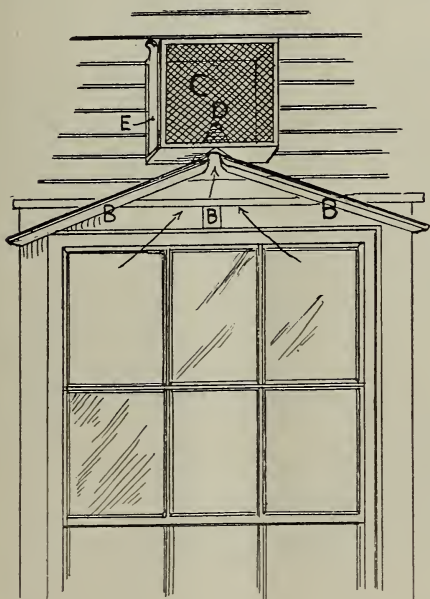
EMPHATICALLY, I believe friends Abbott and Thompson are right, on p. 321, in thinking that well-ripened honey, honey with a "body," is slowest to granulate. Also, friend Abbott is correct in placing alfalfa as the honey that interferes least with the flavor of whatever it sweetens. It has the least flavoring of any honey I know of, and I like it best in tea or coffee—or, rather, postum cereal. [We have been using postum cereal at our house for months back, and personally I very much prefer it to the best grades of Java or Mocha coffee. Lately we have been using what is known as magic cereal, and are inclined to prefer it, because there is no sweetening in it as is the case with postum cereal; and from a health standpoint, as a substitute for coffee it is very much better; and I believe the time is coming when many will say that it is not only better but very much cheaper. Cereal drinks are nutritious, while coffee is a narcotic, and decidedly an enemy to good digestion, if the word of our best physicians means any thing. Magic cereal, having no sweetening, would be more acceptable to the bee-keeper, as he could sweeten it with alfalfa honey just to his liking. Hurrah for magic cereal and alfalfa honey!—ED.]



By R. C. Atkin.

WINDOW-ESCAPES AND TRAPS.

In a former article I told how I used our covered wagon in removing surplus, and some little about my method of carrying the honey into the honey-house and letting the bees out through the window. For several years I have had my honey-house windows screened in such a way that, as the bees passed up, they massed at one point and passed through a hole into a box or trap placed above. As an illustration will tell this better than words, we will show



you the arrangement. The trap should be about 8 or more inches high, as much wide, and 4 or 5 inches thick. One of the 4-inch sides should be made into a slide door, or at least removable, and the whole trap made detachable from the building or window. The trap is designed to remain on the window at all times when not needed off, yet when removed there is still the point of exit above the window — the same principle now in use all over the country in honey-house windows. The trap will act as a fly-trap, and catch any insect passing out that can not pass the meshes of the screen.

REMOVING SECTION HONEY.

In taking off sections, the times that they can not be removed without the bees breaking the cappings are *very* few. Much depends on the manner in which it is done. I have had so very little trouble of this kind that I never stop to consider the question, though I know there is sometimes danger by careless work. Aside from robbers there is never any likelihood of the cappings being marred if there is honey being gathered, or if there be plenty of open cells within easy reach. I have many, many times removed supers that were solid sealed, and no caps disturbed, when no honey was coming in.

Let me tell you how to have the bees bite the cappings, then tell how to prevent it. Just go to the hive and work about it carelessly for five or ten minutes. Get the bees alarmed by a *little* smoke, and yet let them remain in the super. Take plenty of time to get the super off, and perhaps look around awhile or talk to some one who may be about. In short, go about it in a leisurely, careless manner, and if there is not open honey in the super, and sometimes when there is, you will get some cappings cut that the bees may load their sacs.

Here is the other way: Go with your smoker in good trim, start the cover, and, before the bees know what is up, shoot smoke *over* the sections. Keep things moving; and as the cover is clear removed from the super, and the bees starting down, *follow* them with the smoke and *keep them going*. Do not smoke ahead of them, and do not smoke too much at one place, but smoke all parts of the super, turning the smoker at various angles to hit all corners. Just as soon as the bees are well down in the super, *at once* remove it from the hive; and if your yard is nicely grassed, swipe the bottom of the super on the grass to brush off the adhering bees, or brush them off with a big grass or other brush, then set the super on end in the yard or remove at once to the house and set it before the window. In this operation the bees have not had time to dig open cells of honey, but rush around to get away, and those that go into the house on the honey will soon make for the window. It is possible a little damage may sometimes be done; though if honey be removed when it should be there is almost no trouble to speak of. I have practiced this at all times when bees could fly, and I think not one super in 100 is damaged.

REMOVING EXTRACTED HONEY.

Extracted honey I remove in the same way as sections, though it is more difficult to get the bees out of deep combs than out of sections; hence more bees are carried into the house. Suppose I am at the home yard, and want to extract, say, 500 or 1000 pounds. I go to the yard and remove the extras, not stopping to handle frames singly or brush bees off, putting

on another chamber in the place of the one removed, or not, as the case requires. When I carry the honey in, it is set near a window so as to leave the supers as open and airy as I can; and by the time I am ready to extract, the bees are out sufficiently.

Those bees that pass out are, of course, trapped. It would not be necessary to trap them; but the young that do not know their home will congregate on the window or house, and stay there. So I just trap all and carry them to the yard and liberate them there. If one wants to get those young bees in some certain hive to strengthen it, just lay the open trap on or near the hive they are wanted in; and while the most of the young will go there, the older will mostly go to their respective homes. Should the bees all be from an out-apiary, they can be hived where wanted, and will all stay there, for they are in a "strange land."

Hive-escapes I have not used very extensively; but smoking and brushing I have practiced largely, and the window method in a wholesale way. The escape no doubt has its place; but for large and out apiaries they will not do the work rapidly enough. My experience had taught me that I could rapidly free supers of bees in the open air and in the house, and that is why, a few years ago, I raised the question of improvement in escapes. Since then the matter has been discussed over and over; new forms of escapes have been brought out, yet it remains a fact that the question is *not* solved. My opinion is that it will not be solved by any method that leaves the super and the colony in a manner connected so that communication can be had, or that has a small outlet. Either of those factors will defeat the purpose. The super bees must be *lost from home*; and when the excitement is on they must not be hampered in their going.

[M. H. Mendleson, one of the most extensive bee-keepers in the world; J. F. McIntyre, another big honey producer, besides a score of others who raise honey by the ton and carload, think the hive-escape is a great success, indispensable, etc. It does not seem to me that the hive-escape problem is an unsolved problem in view of the opinions of such bee-keepers. Your instructions on how to and how not to cause bees to uncap honey in removing the same are excellent.—ED.]

QUEEN-CELLS BY WHOLESALE.

NEW VS. OLD METHOD.

By H. L. Jones.

Friend Root:—Under separate cover I am forwarding you photos illustrating results achieved by the "new-fangled plan" of queen-raising that you wrote unfavorably of in GLEANINGS, July 1 and Aug. 1, 1895. I felt sure that some of your leading breeders would take exceptions

to your evident retrogression in going back to the "good old-fashioned way;" but if silence gives consent they must all indorse what you have said, which is indeed quite incomprehensible to me unless conditions for queen-rearing are not identical in our respective countries.

Your first objection, that the cell-cups are too expensive to make, is soon dispensed with, since there is no necessity for making the cups, as a strip of drone comb, which can be prepared and attached in a couple of minutes, is preferable. I have not made a cell-cup for years, but have raised thousands of queens on the drone-comb principle, as per Fig. 1. In the lower frame you will notice 17 fine large cells completed out of 19 furnished; in the center frame, 17 out of 18 have been accepted; while in the top frame all the cells are in a fair way toward success. Could you, by the "good old-fashioned method," *average* the same number of fine *available* cells?

One big advantage of the "new-fangled plan" is that you know that all queens are started from young larvæ, and will, therefore, be fully developed. You can also tell to within a few hours when the queens will hatch, if you have been careful to utilize larvæ of only the right age, and experience will soon teach you this. By the method you follow, of allowing the bees to build their own cells as they wish in colonies from which you have removed breeders, the cells must, to make a sure thing of it, be cut out on the tenth day, and will then continue to hatch up to the sixteenth, instead of the lot in about 11½ days, and you can figure out what a vast difference in the net results this variation in time must make where over 1000 per annum are raised. Then, again, these drone-cell cups, by being built all together in one compact cluster, require fewer bees to maintain the requisite temperature; the cells are not joined together so that they can not be separated without destroying one or more cells, and there is no mutilation of brood-combs.

Another good feature about these cells is the ease with which they all fit into the West cell-protectors, just as if they were built to order; and I may mention that I would just as soon think of producing extracted honey with an old one-frame honey-slinger as to raise queens in quantity without the aid of cell-protectors and cages. I give a ripe cell in one of these cages at the same time that I remove the reigning queen; but when sending off young queens that have been laying only a few days I usually give a virgin queen from one to three days old, liberating her right on the combs at the same time, and have very few destroyed. Look at the lower row of cells in Fig. 1, which are within 24 hours of hatching, and you will notice that they are so much surrounded with comb that only the points of the cells are visible; and I find that, when used without protectors, they are less liable to be torn down than the ordina-

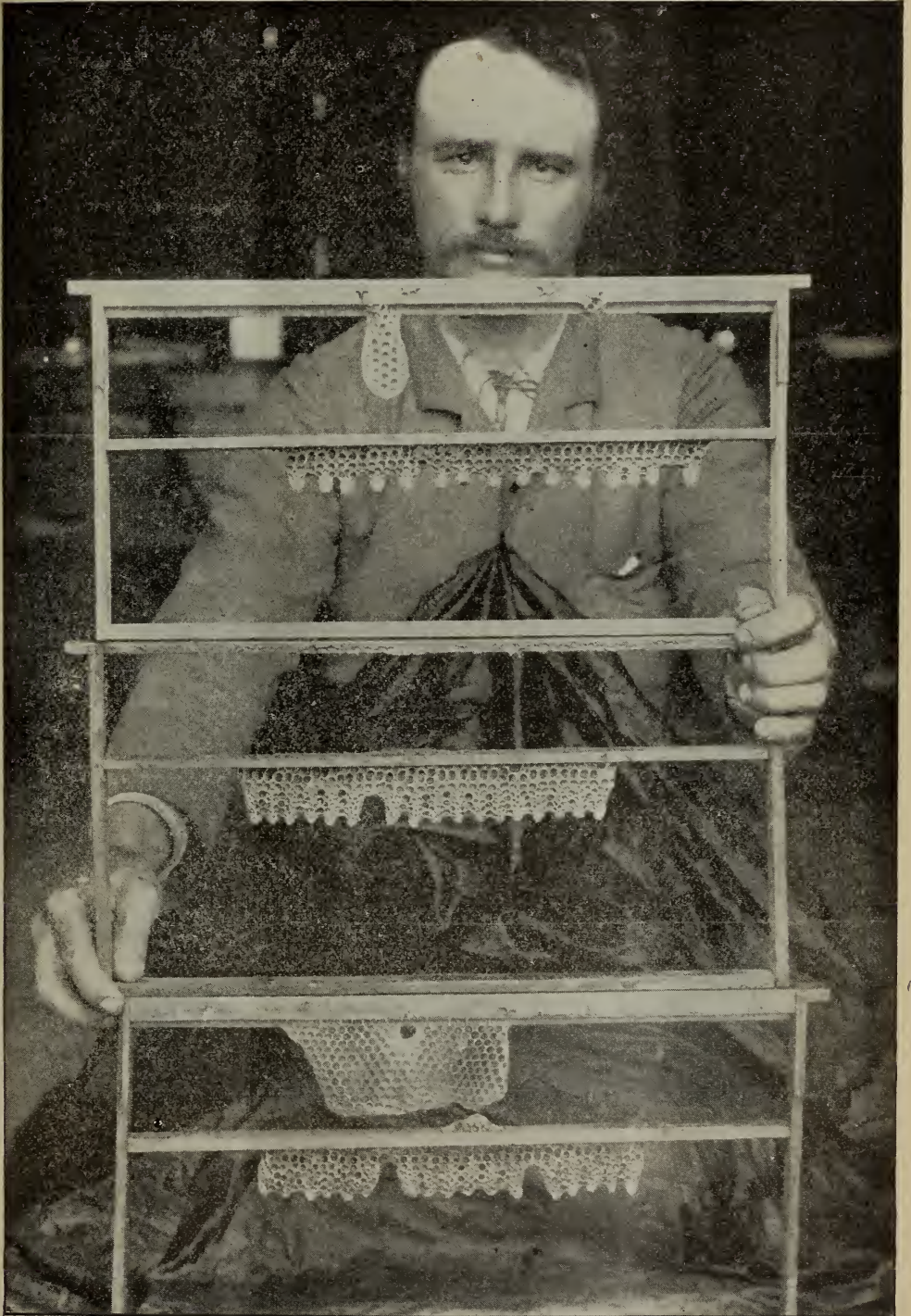


FIG. 1.—QUEEN-CELLS FROM DRONE COMBS.

ry cells, as the thick incrustation of comb protects them. In removing these cells from the bar I place my queen-cell knife on the hot barrel of the smoker for a few seconds, and then cut off the whole row of cells as easily as cutting butter; the warm knife is then slipped between each cell, dividing them ready for the cages. I can assure you that it is a pleasure to handle these cells after those built hap-hazard

have bright cloudless days, and the increased warmth thus generated induces the bees to breed more rapidly, and I thus manage to secure thousands of fine drones much earlier than I otherwise should. When the weather becomes warmer, and the strength of the colony will admit of it, the glass is dispensed with. A zinc honey-board is placed on, and the bees induced to work in the upper story, and are then devoted



FIG. 2.—INSERTING THE LARVÆ.

on the combs. I don't know whether you have ever tried this drone-cell plan; but in any case I will describe briefly the *modus operandi*.

Toward the end of winter I select several of my finest colonies as drone-producers, and, after removing the lids, place an empty super on each, and then cover the frames with good thick cushions stuffed with cotton, and then on top of each super I lay a sheet of glass. We usually

ed to completing cells as per photo. Sometimes I place the prepared cells at once into these upper stories, but usually place them in a strong queenless colony for a couple of days before placing them in the upper story, by which method very few cells will be refused, and results identical with those shown in the photo will be achieved.

To prepare these cells I cut off a row of drone-

cells, and then cut them down to about $\frac{1}{4}$ inch in depth, after which I attach them to the bar with melted wax. A little royal jelly is then placed in each cell nicely, at the bottom. Next I obtain a frame containing newly hatched larvae from one of my choice breeders, and then, seating myself in a chair in front of a strong light, I place a sheet of paper on my knees, and on this lay the frame of brood, and transfer the larvae as per Fig. 2. The center bar being secured by one nail only at each end, is grasped as shown, and can be moved to any angle so as to strike the light. The little stick used for transferring the larvae is simply a piece of section stuff about $2\frac{1}{2}$ inches long, one end being about $\frac{1}{2}$ inch wide, and the other about $\frac{1}{8}$, and as fine as can be sharpened, with the point bent just a little so as to slip under a larva. The larger end of the stick is used for placing the royal jelly in the cells, and occasionally for bruising down a cell so as to get conveniently at the larva. Fig. 2 shows the act of placing a larva in a cell; and the supporting-bar, being wider than the cells, acts as a rest to steady the hand, so that the larva can be placed in the bottom of the cell very gently. I can't, for the life of me, imagine how you can raise more queens by the old-fashioned method.

Goodna, Queensland, Australia.

[The proof of the pudding is in the eating. The proof of your statements is shown in the half-tone plates herewith reproduced, and I am very glad to take back all I have said that could be in any way construed as reflecting on the new way of queen-rearing. If the results shown in Fig. 1 are what you secure on the average (and I have no reason to question it), then any queen-breeder who does not use your method, or one equally good—for instance the Doolittle, is not looking to the interest of his pocketbook. It was G. M. Doolittle who first made a success of having cells built in regular "rows on a stick." A good many have since made a success of his plan, although some of us did not succeed to our satisfaction. It was J. D. Fooshe, I believe, who first made a practical success of raising queen-cells from drone-cells. As I judge, you have simply followed out or elaborated his plan. One thing is certain, friend Jones: If you and Fooshe and Doolittle can get such results as these, then we old fogies who have not made a like success had better work and plan until success is achieved. You may be sure the plan outlined above will be fairly tested in our apiary; and if we do not succeed we shall keep on fussing until we do.—Ed.]

BEE-CELLAR EXPERIENCE.

HOW TO CONSTRUCT A BEE-CELLAR.

By G. C. Gretnier.

The severity of our winters in this mountainous section of Western New York makes wintering of bees on their summer stand in single-walled hives an uncertain affair. I find that a proper bee-cellar is a necessity if we expect to

be successful in the pursuit of bee-keeping. The cellar of which we give an illustration is the result of one complete rebuilding and several thorough overhauls, caused by faulty construction and mistakes at the beginning. We all make the common mistake of reporting our successes—are too apt to give the bright side of the picture, while we are very reticent about saying any thing regarding our failures. It would have a tendency to keep others from making the same mistakes if we would be a little more frank in reporting ours. For this reason I will mention a few points that made my bee-cellar the source of a great deal of work, and caused the loss of many colonies.

The cellar is dug lengthwise into a bank of such elevation that the 22 feet of length makes the front just level with the outside, and the back wall 7 feet high. The bank is perfectly dry ground. After the top soil is removed, perhaps $1\frac{1}{2}$ or 2 feet, the soil is what we call hardpan—bluish clay mixed with gravel, and so hard that it requires an extra effort to penetrate it with any kind of tool. After the excavation had been completed there was no sign of any moisture, nor any indication that there ever would be any, and, in consequence thereof, the first and most serious mistake was made by not providing proper drainage in case it might be needed.

Inside of this excavation, about 15 in. from the bank walls, a frame of 2x4-inch scantling was erected, using the same for sills and plates, and setting the studding every 2 ft. all around. The inside was ceiled up with matched chestnut lumber; and as fast as this advanced, a loose stone wall was laid between this and the bank. The covering was twofold—2x6 joist, with the same ceiling on the under side for the lower one, and rafters with a tight layer of roof-boards, and about 15 inches of dirt on top of them for the upper one. The whole, when finished, had the appearance, very much, of one of our common potato-pits. The front was ceiled on both sides of the 2x4 studding, leaving a dead-air space of 4 inches between. An airtight partition, 4 feet from the front, divided the cellar into two apartments—an entry, or hall, and the cellar proper.

At the proper time, in the fall of 1886, I put 90 colonies into this cellar, and what was the result? All went well the fore part of winter. The temperature in the cellar remained about 46 degrees, and the bees seemed to be doing nicely. About the middle of January the weather changed; winter seemed to be broken, and a warm springlike spell took its place. This did not affect the cellar at first; but after the ground thawed out more and more, the bottom began to show signs of moisture, which increased from day to day at such a rate that, in a short time, the cellar bottom was the only way out of this dilemma was to dig a ditch

through under the doors into the open air, and let the water run off.

But this was not all. With the thaw we had rain, and soon the ceiling overhead became moist also. After a little, drops began to trickle down here and here. They came thicker and faster, until the bees were exposed to quite a respectable rain-shower. I had made the (second) mistake of considering the 15 inches of dirt covering as a rain-proof roof. As long as the ground was frozen it did very well; but when it was thawed out it was no roof at all. Under these extremely unfavorable conditions we could not expect bees to winter, and it was a wonder that any lived until spring.

Of the 90 colonies I put into the cellar in the fall, about half were dead in the spring, and most of the survivors were only fractions of colonies at that.

The succeeding fall I built a board and slate roof over the dirt. I imagined that all the water trouble was caused by the imperfect roof. This made the cellar water-proof from above, but it remained the same under foot. The first thaw we had that winter, water again made its appearance, and the cellar remained wet the rest of the winter. The loss of bees was about the same as the winter before—a half or over.

About this time I concluded that wintering bees at that rate did not pay, and decided to have a bee cellar if mechanical workmanship could produce one. The first move was to take the whole structure down and out of the way. A ditch was then dug next to the bank, a foot wide, commencing in the center of the back end, with one foot deep, gradually increasing each way to $1\frac{1}{2}$ feet to the outside corners. As the bottom of the cellar had already a fall of 6 inches from rear to front, this gave the bottom of the ditch a fall of one foot to 26 ft. in length, and this fall was continued to the outlets of the ditch, about 3 rods from the cellar. The ditch was stoned up in the usual blind-ditch fashion—a throat, by laying round stones on each side, and flat ones to cover, and the remainder filled with small round ones just level full.

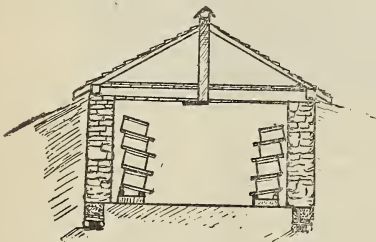


FIG. 1.

On this ditch a substantial 18-inch stone wall, 7 feet high, was laid, using first class mortar throughout, and giving the inside a thorough painting of waterlime. The wall, being 6 in.

thicker than the ditch is wide, lapped that much on to the solid cellar bottom, and, with the cement paint reaching well down and filling the bottom corner, shut off all possible passages from ditch to cellar, so that the structure is positively mouse and rat proof from that direction.

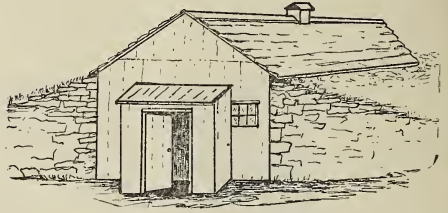


FIG. 2.

A frame of 6x8-inch timber, with 2x8-inch joists framed in at every 2 ft., rests on the wall. The joists are ceiled with matched lumber below, and covered with a double floor above, forming dead-air spaces all along between the joists. The impression received during school-days of early life, together with what has been written now and then in the different journals, on the subject of a dead-air space being a non-conductor of heat and cold, and consequently a safe protector against atmospheric changes, led me to the conclusion that my bee-cellar would be perfectly safe with this protection overhead. Besides, another dead air space, formed by the roof, protects the former from coming in direct contact with the atmosphere.

From the first two winters' experience I am fully convinced that the dead-air-space theory is greatly overestimated. It is all right so far as it goes, but it does not go far enough. I made these observations:

Every thing seemed to be satisfactory until, with the lengthening days, colder weather set in, the mercury ranging for weeks in the neighborhood of zero, at times going as low as 15 or 16 degrees below. At this time the ceiling again began to show signs of moisture. The moisture gradually increased; drops formed here and there, and occasionally they could be heard to strike on the hives or cellar bottom as might happen. Although this was not a pleasing feature of a bee-cellar, no serious results followed. Bees wintered quite well; every colony that was put in in the fall answered to the roll-call in the spring.

The next winter brought nearly the same experience—not quite satisfactory, on account of the moisture overhead. I then tried chaff packing instead of the air-spaces. By opening the floor in the middle, all spaces between the joists were made accessible, and these I filled with oat chaff, using a tool something like a stable-scraper, to pack this filling as tight as possible. Since this change was made the ceil-

ing has remained perfectly dry every winter, showing plainly that, for protection, a non-conducting material is more effectual than an air-space.

The ventilator shown is a wooden tube six inches square, with a four-foot elbow in the roof, and a slide to close it, if desired, on the lower end. While this provides an outlet, no provision is made for an inlet, and I hardly think this is necessary. The same current of air which escapes through the ventilator must be replaced by an equal current of outdoor air from somewhere; and that this circulation is going on all the time can be plainly seen by the constant escape of vapor when the weather is cold enough to condense the warmer air from the cellar and make it visible. Our so-called air-tight structures are by no means hermetically sealed. Doors do not shut air-tight; the matchings are a little defective here and there; the lumber itself may have small openings, cracks, or pinholes; the ditch may be the means of supplying a certain current, etc.; so that, take it all in all, a sufficient amount of air may find its way into the cellar to cause quite a circulation.

The illustration, Fig. 1, has also a storm-house attached to the cellar, which was built a few years ago. I did not deem it necessary for the comfort or better wintering of the bees, although it may be an additional protection; but I built it for my own benefit. I found that it required a considerable amount of work, every time I went into the cellar, to clear away the snow, frequently two or three feet deep, to let the door swing open. The stormhouse prevents all this trouble. The door swings in, and can be opened at any time, snow or no snow. In entering, of course care must be taken not to let any snow tumble in, as this would interfere with shutting the door.

Naples, N. Y.

[Although this article is a little out of season, recent experiences will be fresh upon the mind, and so I have thought best to give it now rather than in the fall.—ED.]

SWEET-CLOVER SYMPOSIUM.

Will Horses and Cattle and Other Stock Eat Sweet Clover if They Have a Chance to Get at it?

NAMING SWEET CLOVER.

Bro. Root.—Permit me to suggest that you do not be in a hurry to change your views as to the classification of sweet clover given by Prof. Gray. There is just as good ground, and I think better, for accepting his classification as that given by Mr. Esenhower. You will not need to examine any more "classical" work than the Edinburgh edition, of 1878, of Chambers' Encyclopedia, to find the classification as given by him; for it appears there in almost

the same language in which it is given in GLEANINGS. This is an English classification, and I am at a loss to know why it is so made. The yellow melilot (*M. officinalis*) is so called from its early use in medicine; but as it is the species which runs wild in Europe, and is common everywhere, there is more reason for calling it *M. vulgaris*, or common, as this is what the Latin, *vulgaris*, means. *M. alba*, as given by Gray, is after the old and long-accepted classification of Lamarck, and simply means, as every one knows who has any knowledge of the Latin, *white* melilot; and as it is not common, except in a few localities in Europe, this seems the most fitting name for this species, in that country at least. There might be some ground for changing the name to *vulgaris* in the United States; but as the species has the special characteristic of a white flower, as well as being common, it would seem a needless change. The name *leucantha*, which is also given in the English classification, is a Greek word which means the same as the Latin *alba*, white; so that this is practically the same classification which Prof. Gray adopted. The tendency to name the species according to the color of the flower is further seen in *M. cœrulea*, as this simply means *blue* melilot. If it had not been for the supposed medicinal qualities of the yellow sweet clover, it would no doubt have been called *M. gilva*, taking the specific name from its color, the same as in the other two species. I am very much inclined to agree with Mr. Jones' idea, that "bokhara clover" is the same as *M. alba*, and that the name, "bokhara," has been wrongly applied to it. As I suggested in another article, I think the name bokhara more correctly belongs to a species of alfalfa.

M. arborea simply means "tree melilot," and I can well understand why the tree-like form and rank-growing *M. alba* should come to be called "tree clover," when compared with the low-branching and finer-strawed yellow sweet clover.

I think perhaps the other species mentioned by Chambers, which was found mostly on the islands of the Mediterranean Sea, and along the coast, is simply a variety of one of the species named above.

If my position is correct, you are not likely to be able to get seeds of any more species than you now have. My presumption is that we shall be entirely safe to trust to the classification given in the new edition of Gray's Garden and Field Botany, as revised by Prof. Bailey. I, for one, am willing to take my chances in agreeing with these two eminent American botanists as against the writer of the article in Chambers' Encyclopedia, or any other so-called "classical" work. EMERSON T. ABBOTT.

St. Joseph, Mo., Apr. 17.

[In regard to the tree sweet clover, some-

body in Florida or Texas wrote some years ago that "away down south" sweet clover makes a hard-wood tree, and stands over winter; and they seemed to think it was the same sweet clover we have here in the North. Who can enlighten us?—ED.]

STILL MORE ABOUT OUR VARIOUS SWEET CLOVERS.

Mr. Root:—You express the belief that there is no difference between the plants of yellow and white sweet clover. On the following page (266) of GLEANINGS you give a letter from Mr. Esenhower, which I found interesting, though I shall be obliged to disagree with the gentleman, or his authority, in regard to some points.

He names but a few varieties of sweet clover. I can add a little to his list, though I can not complete it, for there are at least ten known species—some authorities say twenty—many of which have never yet been classified. He says: "Gray's Manual does not thus classify melilotus," while you say you have always made Gray your standard, etc.

Gray is all right in the main, when you keep within his range; beyond that he counts for nothing. His range ends at the 100th meridian, where he is met by Prof. Coulter, with his "Manual of the Rocky Mountains." How, then, can Prof. Gray be expected to classify plants belonging strictly to the Old World? There are mistakes in his manual, it is true; but they are those of omission rather than commission. Strictly speaking, none of the sweet clovers are natives of the United States; and up to the present, *M. officinalis* and *M. vulgaris* (or *alba*) are the only two that have ever taken out papers of naturalization, and become bona-fide citizens. You say you have *M. cœrulea* (the blue-flowered melilot). I was intending to send to Europe for seed of that variety; but if you have it I shall not cross the ocean to obtain it.

Let me call attention to a somewhat curious fact. English botanists do not refer to melilot as *sweet* clover, but only as melilot, or melilot clover—meaning honey clover, the adjective sweet being of pure American origin.

I am aware that authorities often differ on many subjects, all of which is very confusing to the earnest seeker after truth; and the best thing left us is to discriminate as far as possible between them. I have a good many authors on botany. I have encyclopedias, and various works of reference. How many Mr. Esenhower may have I don't know; but certainly his and mine don't seem to agree in all things. All mine do agree in one thing; viz., that *M. alba* or *vulgaris* are both correct as applied to the white-flowered variety of sweet clover; also that bokhara clover and *M. alba* are one; while the two varieties he mentions, *M. arborea* and *M. massimensis*, are entirely ignored by any work I have.

The word *massimensis*, taken as it stands, would mean, as translated from the Latin, a monthly bloomer. All the melilots are derived from two Greek words—*meli*, honey, and *lotus*, meaning the quantity of honey it contains.

Permit me now to quote from the New Encyclopædic Dictionary, page 3087, constituting what I regard as a true botanical classification of the melilot.

"Melilot, a genus of papilionaceous plants, sub-tribe *Trifolice*. Leaves trifoliate, the flowers in long racemes; calyx, five-toothed; petals distinct, deciduous; keck, obtuse; legume, one or few seeded indehiscent, longer than the calyx. It is found in the warmer parts of the Old World; known species, ten. Two are wild in Britain—*M. officinalis* and *M. alba*. A third, *M. arvensis*, is an escape. A decoction of the first is emollient, and sometimes used on the Continent in lotions and enemas. The second produces swelling in the belly of cattle which graze upon it.

"The flowers of *M. cœrulea* are used to give the peculiar odor and flavor to Schabzieger cheese made in Switzerland, and more particularly in Glarus; the plant is said to be a styptic.

"The seed of *M. parviflora* is useful in diarrhoea, especially of infants; the plant is esteemed in India as forming good pasture for milch cattle."

M. officinalis is the common melilot. *M. arvensis* is the field melilot, and *M. parviflora* the many-flowered melilot. *M. officinalis* (yellow flower) is the only one of the list officially recognized by the chemists as of great medicinal value. The word common, when used in a botanical sense, becomes the distinguishing name of some of the best-known varieties of plants.

A word now in regard to the name bokhara. No reason seems to be assigned for the word. If, as you and others assert, it means hulled seed of *M. alba*, why not with equal reason call hulled seed of any of the clovers bokhara? In my opinion it is a local term only, and about as misleading and incorrect as the name hearts-ease when applied to a polygonum. These things serve but one purpose, and that a bad one—to befog the average reader.

Again, Mr. Root, you ask, "Why, if the yellow and white sweet clovers are not the same, do we find stalks of the yellow growing among the white?" Either of several agencies may have effected this. First, by the bees carrying pollen; second, by the wind; third, by a few stray seeds becoming mixed with a bulk of the white. Seed mixtures will take place sometimes, careful as we may try to be.

MRS. L. E. R. LAMBRIGGER.
Niobrara, Neb.

[In regard to the term "bokhara," it is used in various catalogs, and by wholesale seedsmen. In a circular just at hand from Johnson &

Stokes, of Philadelphia, among their grass seeds and clovers they designate it as follows: "Bokhara clover (*Melilotus leucantha*).” Now, this seed that they name in this way is always hulled. When father Langstroth first called my attention to it as a honey-plant he called it *Melilotus leucantha*.

If we quote one of the names, a good many people will not know what it is; therefore we have mentioned both names, just as we do when we say "basswood, or linden trees;" and even then a good many of our customers will say, "Send me half a dozen each of basswood and linden trees," thinking there are two kinds. If somebody could invent a way of getting rid of so many names for one and the same thing, it would be a wonderful help all along the line.—ED.]

SWEET CLOVER, WHITE AND YELLOW—ARE THEY THE SAME?

On page 255, in speaking of yellow and white sweet clover, you say, "My experience is that the color of the blossoms indicates no difference at all in the plant." As our little girl would say, you make a "mistaken" if you think that it is one and the same plant. On dumping-ground in Peoria, Ill., I have seen a sheet of gold on this plant a full month before a blossom appeared upon the white. The leaves and stalks are finer and more abundant, making better hay, and curing more readily, and not so woody as the white. The white variety grows taller than the yellow.

On my return from St. Andrews Bay, Fla., Apr. 13, every colony of bees answered to roll-call, and most of them were populous. They are busy carrying water to-day.

A good crop of honey has been secured in that part of Florida, from the ti-ti bloom. The country is fast recovering from the disastrous freeze of two years ago. A few orange-trees bloomed and set fruit. MRS. L. HARRISON.

Peoria, Ill., Apr. 19.

MORE ABOUT SWEET CLOVER, WHITE AND YELLOW, ETC.

I do not think white and yellow sweet clover are identical, judging from the manner it grows here. Although its manner of growth is similar, the yellow is considered to be not as good for producing nectar as the white. Here in Albany Co. we have both kinds, although we have the white in greater profusion. I notice each kind generally isolated; that is, there will be patches of each in different places, showing that each perpetuates its own kind. Where they grow near each other the seeds may have been mixed, which would account for an occasional stem of yellow growing among the white, as remarked on page 255.

Is sweet clover of value, both green and dry, as feed for stock? Stock refuse to eat it green when growing in pasture fields. When pasture fails they will eat it green. Cut and cured before stalks get woody, say when blossom-buds appear, stock will eat it in winter, and it makes

excellent fodder. Sweet clover will perpetuate only where no cultivation is done. Plowed under before it ripens its seed, it is as easily eradicated as any other clover.

So. Bethlehem, N. Y. G. J. FLANSBURGH.

THE TWO KINDS OF SWEET CLOVER—YELLOW AND WHITE.

I know of a kind growing on the streets of Beatrice, Neb., that is distinctly a yellow, and does not grow so rank or tall as the white variety, which also grows along the roadside around the same town. This yellow variety is much earlier to bloom, but you can not tell one from the other before the bloom starts to open. I am told that this yellow kind was sown by a German bee-keeper several years ago, and it is believed he either brought or had them sent from Europe for that purpose.

Steinauer, Neb.

CHAS. J. HARRIS.

SWEET CLOVER FOR STOCK.

In regard to sweet clover, I find that stock eat it as readily as alfalfa, and I have noticed my horses leave their corn to bite a choice tid-bit that happened in their prairie hay. I also notice that there is no sweet clover growing in the pastures, but it is coming in rapidly along the roads and hay land. I think persons sowing it should put it in a field by itself rather than along the road.

B. G. SOWLE.

□ Kearney, Neb., Apr. 10.

IN KANSAS, STOCK EAT RIGHT DOWN INTO THE GROUND TO GET IT.

Is it not very strange that some people's stock will not eat sweet clover, green or dried? □ My horses and cattle are running on a piece of this early in April, and they eat right into the ground to get it, and yet they are well fed; but stock that have never been used to it will not eat it at first sight.

JOSEPH SHAW.

□ Strong City, Kan., Apr. 10.

IN NEBRASKA THEY LEARN TO EAT IT DURING A DRY YEAR.

Out in Western Iowa the lanes were full of sweet clover until we had a very dry year; and the stock, in driving them to pasture, got to eating it, and seemed to like it as well as any thing they can get since. E. W. MOREHOUSE.

Sutherland, Nebr., Apr. 7.

CASES, SECTIONS, AND BEE-RANGE.

EXTRACTED-HONEY CASES.

By W. A. H. Gilstrap.

I am interested in the article on shipping honey, p. 232. I don't know how it is done, but somehow the Southern Pacific can smash cases holding two new 60-lb. cans of extracted honey, when well-nailed coal-oil cases are used. With a partition between the cans I have never

known an accident. A firm in Boston once wrote me that it was unsafe to ship honey without partition, and my experience corroborates the statement. I believe the damage here is done by cars bumping together. Care in packing, shipping, and selling is just as important as in producing. We should get the cheapest package possible, to be sure it will entirely accomplish the purpose for which it is intended.

THIN SECTIONS.

Nothing should be considered settled until it is settled right. I have heard the integrity of GLEANINGS seriously questioned when edited by its founder because of its persistently claiming, as an advantage of light-weight sections, that they would be bought by many on account of their cheapness. GLEANINGS is evidently honest about it, but is certainly mistaken, at least in this country.

When I see comb honey in a store I generally ask the price. Next I ask the weight of a section. The salesman calls it a "pound," or "about a pound." If I know it is light I tell him so. If he is honest he weighs some; if he knows it is light he prefers evading the point, or changing the subject. I have never found the light-weight sections selling for less price than full-weight, in a single case. Who has? Ordinary customers see a $4\frac{1}{4} \times 4\frac{1}{4}$ section, and consider it "a pound," "about a pound," or "nearly a pound," and far the most take the former position. If we use thin sections, let us change their rim measure.

J. F. Flory, of Lemoore, Cal., who has probably changed his hives, sections, frames, etc., more than any other man west of New York, has been using a $4\frac{1}{4} \times 5\frac{1}{4} \times 1\frac{1}{2}$ section, without separators, for three or four years, and says it weighs a pound. Some call it Flory's big section, and it does look big. About half a dozen men who run the smaller part of their bees to comb honey use it. You can show one to a customer, and call it a pound, with a clear conscience; he is pleased with it, and buys sooner than he will with a $4\frac{1}{4} \times 4\frac{1}{4}$ of the same weight. I use the standard, honest, 16-ounce avoirdupoise-pound section because it is more convenient, and shippers would rather buy it.

Mr. Flory claims that bees will build a comb from a "starter," fill with honey, and seal it, before they will fill and seal combs on each side of it, such combs to be placed $1\frac{1}{2}$ inches apart. From this he argues in favor of thin sections being built sooner, as well as looking better. The experiment is worth trying.

BEE-RANGE.

On page 240 it seems Borodino bees do profitable work from four to eight miles. I am thoroughly convinced that bees owned by C. M. Davis, of Selma, Cal., gathered considerable camphor-weed honey, which grew within three miles of my bees, while my bees could not

nearly make a living. The ground intervening was rough, but no great heights or winds forbade the free passage of bees. If that was an exceptional case we should all know it, as it seems to me a very important question, how far bees can work to best advantage.

Caruthers, Cal., Apr. 20.

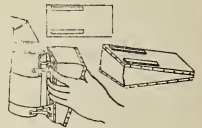
CLEATS ON BELLOWES TO BEE-SMOKERS.

PRACTICAL SUGGESTION FROM A BEE KEEPER OF A THOUSAND COLONIES.

By W. L. Coggsball.

I sometimes know a good thing when I see it. Here is one of the best little things, that I discovered some time ago, and it costs only a little time.

Take one side of a section (or a honey-box), and with a knife cut it into four equal parts lengthwise, and, with some very small tacks, tack them on the edge of your smokers where you take hold, like this, on both sides, and then see how much easier you can handle the smoker and not drop it. The action of the hand in opening and shutting a heavy smoker renders you liable to drop it.



The best fuel that I ever used for a smoker is burlap phosphate-sacks, or gum bags. They can be had very cheaply at junk-shops. I roll them up, not too tightly nor too loosely, so they fit the smoker. I light one end, and lay a stick by the side of the burlap, when I put it into the smoker for draft.

A smoker filled in that way will last three or four hours, with light work at bees. There are no sparks, and no danger of fire.

Bees wintered well, 2 per cent loss. My honey is nearly all closed out—78,000 lbs. We shall have about 1000 colonies this season.

I think it would be to your advantage to call on me next August. I extend you an invitation.

West Groton, N. Y., March 26.

[One of our men, a couple of years ago, in the apiary, I noticed, was using cleats on his smoker-bellows; and on trying them I noticed that they afforded a much better "grip" for the hand. I am not sure but it would be a good plan to put them on all the bellows of our higher priced smokers; but instead of using cleats we would groove the boards on each side so as to leave a molded edge that would look better, and feel more comfortable to the fingers. We will have a lot made soon, and later on send a smoker having this feature to Mr. Coggsball, "with our compliments." In the mean time those who already have the plain bellows-board can very easily fix them in the manner suggested.

It was Mr. Crane, of smoker fame, who first suggested to us a smoker fuel similar to the gum sacks. He uses, or did use, old propolized cloths or quilts that had been used over the frames. We tried some of this, and found it to be an excellent fuel.

Thanks for your invitation. I have concluded to accept it, and at the same time call upon other bee-keepers of your State. It was seven years ago that I visited bee-keepers of your State, and at your kindly hint I am in hopes to repeat that trip in part.—A. I. R.]

APIS DORSATA.

WHY THE CONVENTION DID NOT INDORSE THE PROJECT TO GET THEM.

By W. C. Frazier.

This question has been asked on an average of once every two weeks since the convention; and while many good reasons have been given, still the inquirers do not seem to be satisfied, and think there is some selfish motive behind it that prevented the indorsement. *Nothing of the kind existed.* Now, I am something of a bee-importer myself, and am aware that if *Apis dorsata* would prove only half as good as it has been painted, the man who succeeds in introducing it could carve his name above that of Dzierzon, Berlepsch, or our own father Langstroth. He would not only be respected and honored, but he might make a snug little fortune out of it. Now, I, or half a dozen others whom I could mention, who understand the business, and have had some experience in importing, could lay down at our own apiaries 12 of these queens at a cost not exceeding one hundred dollars for the dozen; and the man who furnished them, the one who gave them a rest in Europe, before crossing the Atlantic, and the express companies that handled them, would all get a satisfactory equivalent for their labor and care.

Now, what's to hinder some one sending for a consignment? It is not the want of means, as that could be secured, even if the one wanting to send did not have the money himself. It's simply the lack of queens. This bee has been known as the giant bee of India or Ceylon, or somewhere else. Now, before the government or any one else undertakes to send for it, would it not be well to locate it? India or Ceylon is rather indefinite. I might say there is gold in South Africa or in Alaska, or even in the United States; but it would require considerable panning to locate it on such meager information. There are Englishmen all over India; and if this race of bees could be domesticated it seems rather strange that some of them have not tried their hand at it. Englishmen usually have an eye to what will pay them, quite as much as we Americans.

These matters were talked over to some extent by a few of us at Lincoln; and the way the thing now stands, I should not feel like investing any of my money in the uncertain venture of trying to get them, and I don't think at present the government could be induced to with the meager information at hand; and

should any one *anywhere* succeed in domesticating them, and have queens to dispose of, there would be no necessity for the government to step in, as some of us would have an order in for them before he could get his papers and his trunk packed.

If any one will take the trouble to look over the reported honey yields given at the Lincoln convention by those present, many receiving from 100 to 450 lbs. per colony, he will readily see why *Apis dorsata* did not create more enthusiasm. *Sensible men let well enough alone.* Most people would be satisfied with such bees, and would only want a few more of them. At some future convention, where the honey yield has been a failure, they will perhaps highly indorse them.

Now, lest I be misunderstood I want to say that, personally, I have not the slightest objection to the government's sending after them; and there never was a time when there was a Secretary of Agriculture who would give such a proposition more attention than we have at present, and it would not be necessary to explain to him that there is such a pursuit as bee-keeping. But if such a petition is presented, if you want to succeed, get things in shape and locate the bees first.

Atlantic, Ia.

[This was written before the editorial appeared on page 339 in May 1st issue. I had not seen his manuscript when I wrote the editorial in question. It will be seen that our thoughts run much in the same line.—ED.]



MULTIPLICATION OF COLONIES.

Question.—I have purchased some bees, and wish to increase them. Is there any way of multiplying colonies, except by swarming, as the bees conduct this, for increase? I must be from home from 8 A. M. to 4 P. M. each day, except Sundays; and if there were any way to multiply my colonies except by natural swarming it would be much more convenient for me. Please tell us something about this in your department in GLEANINGS.

Answer.—The multiplication of colonies of bees, outside of natural swarming, is something that is as old as the most ancient of the things about bee-keeping. In the latter part of the seventeenth century, Swammerdam told of a bee-keeper who knew the art of producing queen-bees at pleasure, and who secured four times as many colonies annually as were usually obtained; and in 1762 Grewell gave directions for making artificial swarms and dividing colonies. Others announced previously to the nineteenth century, that bees were able to raise

a queen from worker brood, which fact was then known to only a few. But as the hives then in use were ill adapted to artificial increase; and as many facts having an important bearing in the matter were then unknown, the practice seems to have met with little success. When Huber partially developed the movable-comb system, and made important discoveries in the physiology of the bee, a greater success in artificial swarming was attained; still, it was seldom practiced successfully, even then, except by the most expert and well-informed apiarists. It would be well for the readers to consult our books on bee culture before undertaking artificial increase to any great extent; for in the most of them this subject is discussed quite extensively, and at greater length than would come in the space allotted to this department.

Artificial swarming is based on the following facts: First, a queen and some workers, 500 or more, constitute a swarm or colony of bees, capable of carrying on all the labors of the hive. Necessity for drones comes only in case of young unfertile queens. Second, worker bees, without a queen, can rear a queen if they are furnished with a comb containing eggs or larvæ under three days old. Third, a part of the bees of any colony, unless too small, may be taken from the hive, with or without the queen, without disorganizing the others. Fourth, a part or all of the comb may be taken, with its contents, from a colony of bees without destroying them, as they will immediately go to work to replace it, if fed, when honey is not coming from the fields. Fifth, queens can be reared in any desirable number by taking the queen away from any populous colony or colonies, according to the number desired; and, when nearly mature, they can be given to the queenless part of any division made.

These facts, while they form the basis for artificial swarming, are subject to many qualifying conditions; and a knowledge of them alone would not enable a novice to multiply his colonies to the best advantage. But a thorough knowledge of the economy of the hive, and of the habits and peculiarities of its inmates, coupled with the above, will, with a person of ordinary ability, give success in proportion to the energy and perseverance of the person undertaking the matter.

The greatest and most damaging error that nearly all beginners fall into is an inclination to overdo the matter. After getting started they generally "swarm" their bees to death, as the multiplying seems so easy during the honey-flow, and they find themselves in possession of a great number of weak colonies, with few stores, when winter arrives, only to drag out a miserable existence for a little while, or die of spring dwindling before settled warm weather arrives.

Another error, in the average locality, is almost as bad as the above, which is, putting off the multiplying of colonies till too late in the season. No definite time can be given, as much depends upon the season and locality; but it is well to do it as early as you can. In the Northern States it can generally be done with safety from the 10th to the 25th of June, and in the Southern States from one to two months earlier, according to latitude. The only safe guide is the condition of the colonies to be operated on. The hives should be well filled with brood and bees, and honey coming in from the fields, to have the proper conditions exist. This will often occur from two weeks to a month before natural swarming would take place. The parent colony, as also a swarm made at that time, will, by the time when honey becomes abundant, be filled with comb and brood, and ready to take advantage of the honey harvest by storing a nice surplus; while, if left till later, each part would have all this work to do at the most important period of the year. Two or three weeks, thus saved, frequently amounts to the difference between an excellent yield of honey and not enough to pay expenses. Many colonies of bees will not come into proper condition for dividing when the more advanced are ripe for the operation, on account of all not coming through the winter in equally good condition, having old or failing queens, etc. Such colonies may be united with others, after destroying old queens; or if the queen is vigorous, a frame of hatching brood may be given from one of the most prosperous colonies, as soon as the weather becomes warm enough so there is no danger of the brood perishing on account of too few bees to care for it properly. Having the colonies in proper condition, it is well to decide whether a great increase of bees is desired or a good crop of honey. Both can not be secured at the same time. If we are satisfied with doubling our colonies, and do that in time, a fairly good yield of honey can be expected in most localities; but a greater increase can not be ventured upon without a great sacrifice of honey, often to the exclusion of the whole crop. As I have given, in a recent issue of GLEANINGS, different plans for dividing colonies, I will not attempt to touch on that matter here. This reply has been written from a comb-honey standpoint.



HONEY-JUMBLES WITHOUT SUGAR OR MOLASSES.

I will give you a recipe for making honey-cookies or cake, that does not need sugar or syrup. It is one of my own devising. I kept

on trying for over four years, ever since we went into the bee business, and I think I have found one that can be relied on, either for cake or cookies. You can try it, and if it works all right with you, let your neighbors try it. You can make it richer if you like by using clabbered cream instead of buttermilk. Bake in a rather slow oven, as it burns very easily. I hope it will work as well with you as it did with me. To make the cookies, use a little more flour, so that they will roll out well without sticking to the board. Any kind of flavoring will do. I use ground orange-peel mixed soft. It makes a very nice ginger-bread.

Terminous, Cal.

MARIA FRASER.

[It seems the honey-jumble recipes, and, in fact, Dr. Miller's leaflet on the food value of honey, came out when I was in Arizona; and after what the leaflet has to say of the advantages honey has over sugar from a sanitary point of view, I was somewhat surprised to see Dr. Miller—yes, Dr. Miller *himself*—(who wrote the leaflet) advising us to put *sugar* and *molasses* in *honey-jumbles*! Well, our good friend who writes the above has demonstrated, at least to the satisfaction of all Rootville, that honey-jumbles, made entirely of *honey*, are away ahead of any made with sugar or cane molasses, and, in fact, I might have known they would be. This honey-cake is not only the nicest cake I ever ate, but I can eat it without any trouble, which is more than I can say for some of the recipes given last winter, where they use not only cane sugar, but cheap molasses, and, worst of all, *lard*. Just think of it—recommending *lard* for *honey-jumbles*! yes, and nobody even protested.—A. I. R.]

THE HOWELL HONEY-CAKE (IT IS A HARD CAKE).

Take 6 lbs. flour, 3 lbs. honey, $1\frac{1}{2}$ lbs. sugar, $1\frac{1}{2}$ lbs. butter, 6 eggs, $\frac{1}{2}$ oz. saleratus; ginger to your taste.

DIRECTIONS FOR MIXING.

Have the flour in a pan or tray. Pack a cavity in the center. Beat the honey and yolks of eggs together well. Beat the butter and sugar to cream, and put into the cavity in the flour; then add the honey and yolks of the eggs. Mix well with the hand, adding a little at a time, during the mixing, the $\frac{1}{2}$ oz. saleratus dissolved in boiling water until it is all in. Add the ginger, and finally add the whites of the 6 eggs, well beaten. Mix well with the hand to a smooth dough. Divide the dough into 7 equal parts, and roll out like gingerbread. Bake in ordinary square pans made for pies, from 10x14 tin. After putting into the pans, mark off the top in $\frac{1}{2}$ -inch strips with something sharp. Bake an hour in a moderate oven. Be careful not to burn, but bake well. Dissolve sugar to glaze over top of cake. To keep the cake, stand on end in an oak tub, tin can, or stone crock—crock is best. Stand the cards up so the flat sides will not touch each other. Cover tight. Keep in a cool dry place. Don't use until three months old at least. The cake improves with age, and will keep good as long as you will let it. I find any cake sweetened with honey does

not dry out like sugar or molasses cake, and age improves or develops the honey flavor.

New Hampton, N. Y.

E. D. HOWELL.

WEIGHTS OF $1\frac{1}{2}$ SECTIONS.

Weights of filled sections, as taken from sales book of last fall. Those cases that held out weight best were clover honey; the lighter, buckwheat.

40 sections, 36 lbs.	40 sections, 34 lbs.
24 " 20 "	40 " 37 "
24 " 24 "	40 " 38 "
20 " 17 "	40 " 41 $\frac{1}{2}$ "
40 " 40 "	20 " 18 $\frac{1}{2}$ "
20 " 19 "	24 " 24 $\frac{1}{2}$ "
20 " 19 "	20 " 19 "
20 " 18 "	40 " 38 "
40 " 40 "	40 " 38 "
24 " 22 "	20 " 19 "
200 " 170 "	Buckwheat.
40 " 33 "	" "
12 " 12 "	White.

I use $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$ sections, with slotted separators. You will find by figuring that they average very nearly 15 oz. The above figures were taken just as they appear on our book—no skipping about.

R. A. TOBEY.

Caton, N. Y.

AN UNUSUAL EFFECT OF BEE-STINGS.

I have read a good deal about bee-stings curing rheumatism, and affecting people in different ways; but I have read of none who say bee-stings affect them as they do me. I have handled bees since I was a child, or about nine years, and have been stung frequently, as all bee-keepers are, and until the last two years the stings did not affect me a particle; but now if am stung on the hands my eyes will become inflamed and swollen. It doesn't seem to make any difference as to the part of the body I am stung, it seems to settle in my eyes. It seems to affect my eyes more if stung several times on the hands. Perhaps the very idea of the bee-stings affecting my eyes may seem ridiculous to some of the more experienced bee-keepers. I can't claim experience only as to the bee-stings, for I am one of the few girl bee-keepers.

This is the second year I have kept the bees although I have worked with them a little for eight years. I always thought any one was a bee-keeper who owned a few hives of bees.

LUVERCIA BEEBE.

Rocky Comfort, Ark., Apr. 2.

[While your experience is a little bit unusual I have known quite a number of instances where persons were affected in the same way. In your case I would advise you to veil yourself very closely, and perhaps wear gloves. At the same time, be very careful about approaching the bees when they have the least tendency to be cross, after a rain or during a time of robbing. As you say you have the A B C book, I would advise you to read the subject of "Bee-stings," especially that item concerning jerking the hands back.

You need especially to have a good smoker. If you have the bees thoroughly smoked, if dis-

posed to be cross, you will be able to avoid stings almost entirely; in fact, the writer goes through the season with very few stings. We use exclusively in our apiary the pure Italian leather-colored stock, not the five banded bees. They are apt to be more or less cross. I am careful to make slow motions immediately over the open hive, and very often work day after day without a single sting. There is no good reason why any one should be stung from six to eight times a day.—Ed.]

BUILDING COMB ON WIRE WITHOUT FOUNDATION, A LA BOARDMAN.

I have been somewhat interested in the advancement of apiculture for the past twenty years, and am not a little surprised at reading H. R. Boardman's article on page 160, March 1. I had supposed that the most of the bee-keepers of to-day were using wired frames. As far back as 1880, when I lived in Wisconsin, we wired all of our frames, using two wires horizontally across the frame, but we found it was difficult to get them taut enough without springing the bottom-bar; and to obviate this we substituted a strip of wood, about $\frac{1}{8}$ inch thick, horizontally across the frame; but this took up too much room. We now use wire, and find the bees build more readily on them than they do without. We use about an inch of foundation for a starter, and we get as fine combs as one would wish to see. We have 1000 frames wired, and ready to be filled with comb. This season we put our wire lengthwise of the frames, running it from the end of the top-bar to the end of the bottom-bar on the opposite end of the frame, using two wires running in opposite directions, and we find it stays the frames, and the bees take readily to it. We use No. 24 wire, but I think 26 or 28 would be better, perhaps 30. In this climate, when the mercury registers 120 we find that new comb is pretty apt to fall down when it is full of brood and honey; whereas if it is wired it would have to melt before it would fall, and the wire does not seem to interfere with brood-rearing in the brood-nest.

Now, Mr. Root, perhaps I am behind the times; but it sometimes seems to me, when I am reading GLEANINGS and some of the other journals (for I read every thing I see that says b's b's b's) that there are others who are behind the times a little as well as my unworthy self.

M. H. DUNN.

Fullerton, Cal., Mar. 10.

FASTENING FOUNDATION TO THE TOP AND SIDES IN SECTIONS AS A REMEDY FOR ONE-SIDED COMBS.

I see in GLEANINGS there is considerable discussion about comb honey being stuck fast to the separators, making a one sided comb. I don't see how the foundation could swing to one side if it is fastened to the top and both sides. I use full sheets in sections, and fasten

to the top and sides with melted beeswax, and never have any such trouble.

Perhaps these large bee-keepers use foundation fastened to the top only. This, I think, is a very poor way. One will find that most one-sided combs come by the foundation swinging to one side by a jar in handling the supers before they are put on the hive. That has been my experience.

EDWIN RICKARD.

Schoharie, N. Y.

THE NEW DRAWN FOUNDATION; IS THERE DANGER THAT IT WILL REDUCE THE PRICE OF COMB HONEY?

Your samples of deep-cell foundation came to hand perfect. I congratulate you on your success. It is a veritable triumph of mechanical skill, and will doubtless prove the same as a business enterprise. There are some questions in connection with it that have not been mentioned in the bee-journals so far, and which time only may determine. For instance, will it increase our output without lowering the price?

WM. RUSSELL.

Minnehaha Falls, Minn., Apr. 24.

[I think there can be no question but that the new product will enable the bee keeper to produce more and better comb honey—more, because the bees will enter the sections quicker, and better because the sections will be better filled out. It may possibly reduce the price; but I hardly think so, because the price is already too low to leave much of a margin. The effect will be to make more profit, and the better-filled combs will tend to increase the price if any thing.—Ed.]

FLIGHT OF BEES FOR HONEY.

Please tell me how I can get my bees to go about $2\frac{1}{2}$ miles where there is abundance of poison oak that affords quite an amount of bee-pasture, and do not wish to remove the hives there.

W. C. MYER.

Ashland, Or.

[I can not imagine why you should desire your bees to find pasturage on the poison oak. If the tree is poisonous in its character there will be a great liability of its affecting the honey, rendering it a source of danger to bees as well as human beings. Usually bees will not fly over a mile and a half; but they have been known to go not only two miles and a half, but even five and ten miles; but the latter distance was across a body of water. Such cases as these are exceedingly rare. Our bees have gone two miles and a half; but when the honey flora gave out within a mile or a mile and a half they extended the distance a little further until they reached the distance named. You can generally set it down as a rule that, when bees find plenty of forage within a mile and a half, they will not go further.—Ed.]

I have a young queen a few days old. I see no drones nor drone-cells. What must I do in order to get her fertilized?

D. L. PERINE.

Good Hope, W. V., Apr. 15.

[If there are other colonies in the vicinity, there will be no trouble about the queen mating. There are always a few scattering drones early in the season.—Ed.]

HOW TO PRESERVE MEAT WITH HONEY.

After the pork is properly smoked, take pure honey (fall honey will do) and liquefy it if candied, and stir in enough finely ground black pepper to make it pretty thick; then with a cloth or a cheap new paint-brush rub this mixture all over and well into the meat; then hang in some cool dry place until wanted for use. A wheat-granery is a good place. Try this and see how sweet and nice the meat will be.

Nye, Ind.

C. A. BUNCH.



J. T. E., W. Va.—You can remove the outside frame, as you suggest, and put an empty comb in the center of the brood-nest profitably now.

J. B., Minn.—Bees sometimes gather maple sap; but as the conditions favorable to the flow of sap are not generally favorable to the flight of bees, very little sap is gathered in this way. The bees may gather honey from flax-blossoms. They will gather nectar from almost any flowers in some seasons.

L. T., Ont.—If your neighbors' bees rob yours it indicates that your colonies are weak or your entrances are too large. Contract the entrances down so that only one bee can pass at a time; and as the colony increases in strength, enlarge the entrance. For particulars, see "Robbing," in our A B C book.

J. M. S., Cal.—To get rid of ants, find the nest; and, with a crowbar, or stout pick, make a hole in the center of the nest about a foot deep. Then pour into it about five cents' worth of bisulphide of carbon, and stop the hole up tight at the top. This will kill all the ants. For further particulars, see "Ants," in our A B C of Bee Culture.

M. E. S., Fla.—It is very seldom that the bees show a disinclination to go through a bee-escape. Sometimes it may be advisable to give them a little start with smoke. After they get started going through they will pass into the brood-nest below with a rush. Of course, if the queen or brood should happen to be above in the sections, that of itself would have a tendency to hold the bees above.

R. L. S., Kan.—The idea that bees will injure alfalfa is perfectly ridiculous. It is well known by all those who know any thing about the fertilization of flowers that bees, so far from doing any damage, are a positive benefit. We send you a pamphlet on "Bees and Fruit" that ought to settle the matter. If you hand it to your neighbor we think it will convince him—that is, if he is open to conviction.

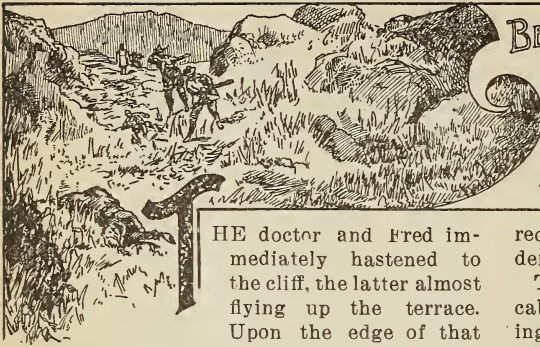
A. R. D., Oregon.—In your climate you can probably introduce queens at any time now. The royal jelly referred to is a milky food that is found in queen-cells. It is usually dipped out by means of a tiny wooden spoon, so to speak, and deposited in cell-cups along with the egg from which the queen is to be reared.

W. H. W., Ky.—The first thing to do is to determine whether your hive is queenless. In order to do this, put in a frame of unsealed larvæ or eggs from one of your other colonies; and if the bees build queen-cells then you may know absolutely that they are queenless. If you have no other colony from which you can get eggs or larvæ, then look through the hive two or three times very carefully, and see if you can see the queen. If you do not find her, it might pay you to send and get a queen.

J. D. W., Md.—It is true that we speak of sending larvæ by mail for the purpose of rearing queens; but it is not practicable to have them go any great distance—in fact, out of our own State; and even when sent to points within the State, it has so often proved to be a failure that we have abandoned the practice. The price at which untested queens are sold makes it entirely unnecessary to send for larvæ and run the risk of raising queens. When you get an untested queen you get entirely new stock, and probably a queen that is fertilized by a pure drone.

D. L. P., W. Va.—We would advise you to put a frame of unsealed larvæ or eggs from one of your other colonies into the hive which you think is queenless. You can not always be positive, at this time of year, whether a colony is queenless or not; but by putting in the eggs or larvæ you can determine the point by noting whether they build queen-cells. Some drones will doubtless be flying by the time your young queen is ready to mate. If there is already a queen in the colony which you think is queenless, putting in the larvæ will do no harm, but good. If no cells are built you will know there is a queen in the colony.

W. G., Okla.—In answer to your question as to whether bees will clear their own hives of drones themselves, I would state that they will not do so until after the honey season. Just as soon as the honey-flow is stopped they will begin killing off their drones. The modern bee-keeper does not care to raise any drones unnecessarily, as they are consumers during the honey-flow. By the use of comb foundation there is nothing but worker-cells in the ordinary comb; and the consequence is, there are very few if any drones reared. It does not pay to keep drone comb in the hive. If there is any it should be cut out and replaced by worker. If the drones are already raised and in the hive you can catch them in the Alley drone-trap illustrated in our catalog.



BEE KEEPER
FRED ANDERSON

OR
The Mystery of
Crystal Mountain.



THE doctor and Fred immediately hastened to the cliff, the latter almost flying up the terrace. Upon the edge of that tract of obsidian points they found Alfaretta lying insensible if not dead. The donkey was, sure enough, dead; in his struggles upon those knife-like projections he was literally cut to pieces. Gimp had tried to rescue Alfaretta, but had sustained only severe cuts from those knife-like edges. Fred, more methodical, secured a club and broke down all intervening points; then, tenderly lifting Alfaretta in his arms, he carried her to a place of safety. When thrown from the donkey she struck the obsidian points in such a way as to break them off. Blood was flowing profusely, and the doctor ordered her to be borne to the cabin. A cot was sent for, and she was carefully carried down the terrace to her cabin.

The doctor, with the aid of the two squaws, made an examination of the wounds, and found nothing serious except that there was a piece of obsidian driven firmly into the skull in the parietal bone near the coronal suture.

The doctor explained to Fred that he dared not just now remove it; "for," said he, "there are certain conditions that may follow which may result in death. But how did this all happen? The donkeys have always kept at a proper distance from those places."

Gimp, whose wounds had been carefully bandaged by Sam, gave the following explanation: "Yer see, mister doctor, Alfaretta was a ridin' that ere donkey jest as proud as ef she was the queen of Sheber; and yer know that ere little queen-rearin' row of hives on the heeltrope terrace? Wal, the donkey tipped one over; the bees want much cross, but one stung the donkey's ear, and then he jest landed his heels right an' left, an' jest run over an' kicked over the hull row, includin' them big swarms in the center; then he seemed ter think that place out amongst the glass knives a good place to roll, and, accordin', he rolled; an', poor donkey! he'll never roll any more; an', what's more, I'm feared Alfaretta never'll ride any more. D'y' think, doctor, she'll die? Doctor, she's been gooder'n a sister ter me, even if they du say her mind has sprung off the hinges."

"Gimp," said the doctor, "I hope she will

recover; and, though her life hangs by a slender thread, we must hope on."

Then, after pacing up and down before the cabin a few moments, he stopped, and, addressing Fred, said, "Fred, that piece of obsidian must be removed, even if death follows. Come with me."

Dr. Hayden prepared himself with the necessary accessories, and proceeded to perform the delicate operation. Fred was too excited to be of any aid; but the two squaws were stoical enough to correctly render the little aid the doctor required. The scalp was turned back from each side of the wound, and the piece of glass-like substance was carefully removed with a pair of pincers. A perceptible pallor came over the doctor's face at the crucial moment; but a little later an expression of surprise shone from his eyes; for, with the piece of obsidian, there came a piece of the skull about the size of a nickel. The doctor carefully laid this to one side and proceeded to dress the wound by first trepaning the skull. Alfaretta began to show signs of reviving under this operation, and a little chloroform was used to complete the operation. As soon as the scalp had been replaced and a few stitches taken, the doctor left his patient in the hands of the squaws; and, taking the small piece of skull in hand, went out to where Fred was anxiously waiting and pacing to and fro beneath the oak-tree.

"See here, Fred," said he, holding the little bone in his hand; "this piece of skull came away in the operation."

"But, doctor," said Fred, in deep anxiety, "what is to be the outcome?"

"Wait a moment and I will tell you," replied the doctor. "By a wonderful chance—no, I will say providence—this obsidian splinter penetrated Alfaretta's skull at the identical point where she was injured by the spar striking her head in San Pablo Bay. Now, see; this little bone, or granular formation, or bubble-like excrescence, protruded and crowded against the brain; and so wonderfully delicate is that organ that the least displacement of some portions of it causes trouble. In the case of Alfaretta it was so-called insanity. Now, furthermore, if I mistake not, when she revives she will be a sane, sensible young lady."

"Doctor, I am overjoyed at what you tell me. Alfaretta sane! I can hardly picture such a

future; and to return her thus to her parents—or—or—excuse, me, doctor—to her foster parents."

"Yes," said the doctor, "it is hard for you to realize that she should be any other than Miss Buell; and whatever occurs, Fred, you must not hint to her my relationship to her; for if she does indeed recover, as I think she will, I wish to make all these matters known to her myself, and in my own way."

"Your admonition shall be respected," replied Fred.

"And, Fred, there is another thing which may seem strange to you; and upon this point I will give you warning. When Alfaretta returns to consciousness she will take up the events of her life where she left them in San Pablo Bay. Her life since that day will be a blank, and she will have no memory of you or any other person she has met since."

"Is it possible?" exclaimed Fred; "then I shall have to get acquainted with her as though she were a stranger."

"Yes, Fred; and if you have indulged in higher sentiments toward her you will have to renew them now to a sane person; and, if I mistake not, to win her will require talent. But, come; Alamantapola is calling, saying there is a change in the patient."

They both hastened to the cabin, and there was indeed a change. Alfaretta was sitting up in the cot. There was an intelligence in her every look as she surveyed the group around her.

"Where am I? oh! where am I?" and she grasped the clothing around her neck as if to loosen it for better breathing. "Where am I, and why am I left with these strange people? Where are my parents? Where are Mary, Fanny, and William? Were my companions drowned? Oh! that terrible moment! Oh! where am I? Take me to my home, to mother and to father!"

"There, there!" said the doctor, soothingly, as he observed her excitement. "You are with friends, and many strange things have happened to you since the boat was capsized. Your parents and friends are well, and you shall see them all in good time; but now you are weak, and must rest."

The doctor and Fred again left the cabin, the doctor giving Alamantapola and the other squaw instructions respecting the patient.

"That seems strange," said Fred. "After following me, and taking such an interest in finding me, she does not know me." And Fred

(so inconsistent is human nature) began to wish she were insane again.

Alfaretta began to regain strength, and, after many days' confinement to the cabin and to the tender care of Alamantapola, she was permitted to take short walks under the oaks. A hammock had been slung in a convenient place, and many hours she sat here, either reading or in reverie. Her appeals to those around her to know about her people, and why they were not with her, were put off under one' pretext and another, but all bearing upon the point that she was not strong enough.

"Why, Fred," said the doctor, "the revelation that we have to make to her will require all of her strength: in her weakened condition it might prostrate her again; but now in a few days I think she can bear it, and you can break the matter to her as you see fit."



"THE DOCTOR PROCEEDED TO DRESS THE WOUND."

And so it came to pass that, one day while Alfaretta was sitting under the oak-tree, Fred sat down near her, and said:

"Miss Buell, it seems that you have no remembrance of meeting me previously to seeing me in this valley?"

"No, Mr. Anderson, I have no recollection of meeting you."

"Do you remember living upon the Sacramento River?" said Fred: "and do you remember seeing a bee-ranch on the bluff, where I produced a nice lot of honey? and then do you remember the fearful flood that washed my bees, Mat Hogan, and myself down the river? and do you remember helping to rescue me, and"—

"Why, Mr. Anderson," interrupted Alfaretta, "what a fantastic story you are telling me! I lived in Berkely with my parents; and, Mr. Anderson, you must have some other person in your mind; and," said she, with a little laugh, "you are a romancer indeed."

"Now, Miss Buell," said Fred, "if you will tell me the date of the accident in San Pablo Bay I will try to reveal what seems a mystery to you, and why you are not with your parents."

"Let me think," said she; "vacation—ah, yes! it was the 25th of September."

"What year?" asked Fred.

"Why, what a question, Mr. Anderson! you are so puzzling!—this year, of course, 1887."



"WHERE HAVE THOSE FIVE YEARS GONE?"

"Now, Miss Buell, you must not be surprised; but look at this almanac."

"What!—1892!" she said, slowly: "impossible, sir," said she, severely; "are you deceiving me?"

"How can that be, Miss Buell, when this almanac speaks for itself? Take it and look it over thoroughly. You observe there can be no deception, but—"

"Five years! five years! O sir, how strange! how very strange! Am I dreaming? am I sane?" And she gave way to tears, and, looking at the almanac again, she said, brokenly, "Where have those five years gone?"

"Miss Buell, you surely are now in your right mind; but for five years and a half you have been mildly insane."

Then Fred told her the story of the past five years, as far as he knew it, and all the incidents in which she had taken an active part, and

finally the cause of her recovery. She said not a word during the recital, but sat in a stupor of bewilderment.

"So strange!" said she, finally. "My poor dear mamma!" said she; "how she must have suffered all these years! Let me go to her—let me go now."

"You shall go in good time," said Fred; "but Dr. Hayden thinks you are not strong enough to take the journey."

"Hayden! Hayden!" said Alfaretta. "Hayden! why! papa had a cousin by that name; but he was killed in South America several years ago."

"That was a false report," said Fred; "this Dr. Hayden is your kin-man, and you are in safe hands. Be patient; all will be well. Remember there is a providence in all this. There is a divinity that shapes our ends, rough hew them as we may."

PREPARING COMB HONEY FOR SHIPMENT; EXCELLENT SUGGESTIONS.

In regard to shipping honey, are there not a few things to be observed by the shippers that have not been mentioned? One is to mark crates, requesting them to be loaded lengthwise of the car, so the jar will come against the edge of the combs. Another is, when using small crates nail two or more together so they can not be tossed from one man to another. There is more freight injured in this than in any other way while being handled. A box of a convenient shape, weighing less than 50 lbs., is frequently tossed by local freight men. They are paid by the trip, while men at regular transfer stations are paid by the day, and are not in such haste, consequently do but very little damage to freight. Trainmen are expected to use particular care to avoid damage to goods or property, and frequent occurrences of the same are regarded as incompetency on their part; but they are obliged to judge principally from the damage to property, for they can not find out so well about goods.

Reynoldsville, Pa. A. M. APPLGATE.

DISCOURAGING FOR FLORIDA.

Prospects here are for an almost absolute failure of this season's honey crop. Bees are in splendid condition, but the saw-palmetto is putting on not much over a tenth as much bloom as usual.

O. O. POPPLETON.
Stuart, Florida, April 7.



WISCONSIN now has a good-foul brood law, and N. E. France, of Platteville, Wis., is inspector. It goes without saying that foul brood will be cleaned out of Wisconsin, root and branch.

IN our last issue, page 340, we inadvertently said that anywhere from \$5000 to \$10,000 worth of queens was sold in a single season in this county alone. Of course, the general reader will understand that we meant *country*.

WE are having a large amount of fruit-bloom, heavy rains, and lots of brood-rearing. In our locality it looks as if the season would be two or three weeks backward. Brood-rearing having started a little later than usual, we shall hope that basswood and clover will come on a little later.

I CAN not see why there should be any acrimony shown over the fact that the new organization, the United States Bee-keepers' Union, has a name similar to the National Bee-keepers' Union. As every one knows, when the constitution was drawn up it was with the idea of amalgamation. As that was voted down by the old organization, the new one had to go under the name proposed for the two amalgamated societies. Just as soon as there can be a meeting I do not think there will be any question but that the name will be changed; and, by the way, I do not see that there needs to be any feeling of rivalry between the two Unions. They have separate lines of work, and to a large extent the members of one society belong to the other.

THE CHARACTER OF COMB FROM DRAWN FOUNDATION.

WE are constantly experimenting with and testing the new drawn foundation. The results of the former experiments have been confirmed in every case; namely, that the bees accept the new product immediately, no matter whether honey is coming in or not. In cases where ordinary foundation is gnawed into, the new drawn article is accepted at once. We placed a sample of it in the center of the brood-nest, between two dark combs. In a day or two its *whole character* was completely changed. Instead of being of a pearly, transparent, polished white, as it leaves the dies, it assumed a dingy-yellow, opaque, roughened appearance, like the comb around it. The surface of the walls had been completely worked over, so they were as thin as natural. There can be no question about its utility in the hive; and its "character" is made to conform almost identically to comb made wholly by the bees. Except for the flat base, which the bees do not change, the

fully completed comb, empty, could not be distinguished from the natural-built comb made by the bees without even the use of foundation.

WORK FOR THE NEW UNION; PURE FOOD LAWS IN EVERY STATE.

THE Board of Directors of the new Union, if I am not very much mistaken, will recommend that the organization devote its attention to the enactment of pure-food laws in every State of the Union. Of course, this work can not be done in a day nor in a year, and perhaps not in several years, and in some States, perhaps, never. It has been recommended that the organization commence first with Illinois. In that State, more than in any other, there is need of just such a law, as Chicago now seems to be the center of glucose-mixing. If the U. S. Bee-keepers' Union were to send C. P. Dadant and J. A. Stone to Springfield, to buttonhole the members of the Illinois Legislature, there might be a good prospect of a law being enacted in our favor. Both of the bee-keepers mentioned are strong and influential men, and I believe that Dadant, as a lobbyist, can stick and hang like a tiger.

The salutary effect of a pure-food law in Illinois would have its immediate effect in Chicago. The adulterators in that city know that there is no law, so they can palm off their vile mixtures as much as they like. The effect of the recent enactment of a pure-food law in California has been most gratifying to the friends of pure honey. I have already announced that glucose-mixers have been arrested, and now, of course, the rest will proceed very cautiously in their nefarious business. There are already good laws in Ohio and Michigan, as I happen to know. There are doubtless other States with good laws; but in the great majority there are no pure-food laws.

A BACTERIOLOGIST AND FOUL BROOD.

F. C. HARRISON, Bacteriologist of the Ontario Agricultural College, is about to make the subject of foul brood a special study. He has written us for the privilege of consulting our works here at Medina—a privilege which we have most gladly accorded him. After acknowledging his thanks he writes:

Ed. R. Root:—I should be glad to make bacteriological examination for foul brood of any suspected material that may be sent me, without charge, and I should be indebted to you to publish this fact in your paper. My object in doing this is to get hold of as much material, and from as widely different sources, as possible.

F. C. HARRISON.

Guelph, Ont., Apr. 28.

Those of our readers who have foul brood in their apiaries will, we hope, be kind enough to forward specimens of the disease to Mr. Harrison. If they are doubtful as to its being real foul brood, send a sample any way, and learn what it is. The only regret is that Ontario, with its splendidly equipped agricultural col-

lege, is not in the United States. But even if it is not, I am sure we bee-keepers on this side of the line will be very glad to assist in any way in our power.

ARBITRATING DISPUTES BETWEEN COMMISSION HOUSES AND BEE-KEEPERS.

A DIFFICULTY arose between one of our prominent commission houses and a bee-keeper. Both parties finally agreed to have the matter arbitrated by the National Bee-keepers' Union. All correspondence was submitted to General Manager Newman, and by him turned over to a board of arbitrators. Each arbitrator turned in his own decision independently and without the knowledge of what any of the other members had decided or would decide. These decisions were laid before the General Manager, with the result that the commission house was to pay the bee-keeper a difference of \$10.00 as settlement. These three or four men, acting as arbitrators, certainly could have no interest one way or the other; and while the decisions would probably please neither party exactly, it is probably as nearly fair as any thing could be.

It strikes me that this method of settling difficulties between an honest commission house and a bee-keeper equally honest is the way. Very often I have been called upon to act as arbitrator in disputes of this kind; and, no matter which way I have decided, I was sure to merit the ill will of one of the parties; but when a *body of men* reach a conclusion, and unanimously decide upon a certain plan of settlement, neither party has much ground for feeling that he was not given fair treatment.

"BEE PIZEN."

GENERAL MANAGER NEWMAN does not seem to take it very kindly that the editor of the *American Bee Journal*, Mr. York, should deem his official acts and utterances as proper subjects of criticism; and in replying to an editorial on page 248 of the *American Bee Journal* he uses some pretty harsh language. Referring to the present editor of the paper that he himself once edited, he says: "If the writer intended to be honorable he would not attempt to misinterpret the quotations from my report." Other expressions, such as "bombastic," and "contemptibly mean," are uncalled for when directed at one who worked with him for years in the same office—in the same harness, as it were—striving to make the "Old Reliable" the good paper that it was. In another bee-paper Mr. Newman refers to the publishers of the *Bee-keepers' Review* and of this journal as the "worst enemies" of the pursuit of bee-keeping—one for one offense, and one for another.

I remember of once hearing Mr. Newman at a convention recess say that he often found it necessary to withdraw the "stings" from certain articles that were sent in to him for pub-

lication, as he thought it was unwise and unnecessary to wound; that argument courteously given was more effective. His policy was a good one, and is practiced by many a wise editor. Now that he is out of the editorial harness of the *American Bee Journal*, it seems to me he has forgotten himself. The force of his articles would have been *very much greater* if he had pulled out the stings rather than to have sent them as they were for publication, bristling with "bee pizen." Such violence of language quite defeats its end, and I am surprised that Mr. Newman should not see it so.

PETTIT'S NEW SYSTEM OF PRODUCING COMB HONEY; EXPERIMENTS AT THE ONTARIO AGRICULTURAL COLLEGE.

ON pages 51 and 160 we have published articles relating to Pettit's new system of producing comb honey, or, rather, a method by which the outside surfaces of the two rows of sections next to the super sides may be filled out as well as the surfaces in the center of the super. Experimenter R. F. Holtermann, in the Twenty-second Annual Report of the Ontario Agricultural College, says: "Comb-honey producers know that, with rare exceptions, in the comb-honey supers now used, sections having their faces to the wood are filled last, and the inner sections have to be left capped and finished on the hive, waiting for the bees to finish the surface of the sections joining the wood."

The idea of S. T. Pettit, of Belmont, Ont., already outlined in these columns, was made the subject of an elaborate experiment last summer at the Ontario College. The main objects in the experiment, which I give in the language of the experimenter, are thus set forth:

1st. To compare the number and size of pop-holes in the sections of supers with the bee-space above and those without. Those without had a quilt next the sections; those with, had a board with $\frac{1}{4}$ -inch bee-space over the super, between the board and the sections.

2d. To compare comb honey having the face of the last sections and wood sides of supers separated by only the usual one bee-space, and those having two or more bee-spaces. The two or more bee-spaces were secured by means of dividers of different construction. Some were of solid boards with holes bored in them. Others were made of strips. The bee-space used was $\frac{1}{4}$ inch in every case, and it is very important that this should be exact.

Following is the result of the work of seven colonies with cloth and no bee-space over the sections.

Hive No. 1—An average percentage of pop-holes.

Hive No. 2—Same as number one.

Hive No. 3—Pop-holes slightly more numerous than the average.

Hive No. 4—Rather better than preceding supers.

Hive No. 5—Although sections were particularly well filled, the pop-holes were remarkably numerous.

Hive No. 6—A still larger percentage of pop-holes in the corners both at top and bottom.

Hive No. 7—About the same as No. 6.

The result of experiments with $\frac{1}{4}$ -inch bee-space over the sections, nine colonies in the group, is as follows:

Hive No. 1—About 10 per cent fewer pop-holes than the average of the above.

Hives Nos. 2 and 3—Same as number one.

Hives Nos. 4, 5, and 6—About 7 per cent fewer pop-holes than the average of above.

Hive No. 7—Still fewer pop-holes.

Hives Nos. 8 and 9—A very decided advantage over no bee-escape.

Hive No. 10—About the same as the average of those having no space above.

Nos. 11 to 16 showed a smaller percentage of pop-holes.

GENERAL REMARKS.

One fact was very conspicuous, viz., that the pop-holes in sections with $\frac{1}{4}$ -inch bee-escape were smaller than in those without. This report tallies with results obtained from experiments conducted in previous years, but not before reported. The probable reason for there being fewer and smaller pop-holes with the bee-space above the sections, is, that the bees appear to require a space to pass from section to section, and a bee-space above facilitates this passage.

The result of the experiment with two or more bee-spaces between the side of the super and the face of the section next the side, is as follows:

Two bee-spaces and divider at one side of the super and only one bee-space at the other.

Hive No. 1—The outside of sections with the two bee-spaces and divider were better finished and cleaner than the side with only one.

Hives Nos. 2 and 3—Same as number one.

Hives Nos. 4 and 5—No perceptible difference as to finish of comb, but the sections were cleaner.

Hive No. 6—A difference in favor of the two bee-spaces.

Hive No. 7—A marked difference in favor of the two bee-spaces.

Hive No. 8—The side with two bee-spaces decidedly cleaner and better finished.

Hives Nos. 9 and 10—Two bee-spaces on each side of the super, both sides clean and perfect.

The dividers were differently constructed. One set had holes bored $\frac{1}{8}$ inch in diameter and $3\frac{1}{2}$ inches wide, and material was $\frac{1}{4}$ inch thick. The other set were made of strips the entire width of the divider, $3\frac{1}{2}$ inches, and seven strips $\frac{1}{8}$ inch wide with $\frac{1}{4}$ -inch spaces between. The dividers with the holes gave the best satisfaction. With the strips there were more burr-combs and the comb opposite the space between the strips was ridged, giving the entire section a ribbed and uneven appearance, a modification of what we find in the common washboard. Five other hives were supplied with two spaces on one side and one on the other. In three there was no marked difference; in the other two there was a difference in favor of the two bee-spaces. Two hives were provided with queen-excluding metal as dividers. The result was as good as with any other divider; but owing to the limber and pliable nature of the zinc and the importance of having the bee-space either more nor less than $\frac{1}{4}$ inch, we would not recommend this material.

The results of the above test and those obtained from other hives in the apiary, show a marked difference in favor of the two bee-spaces. The reason would appear to be that, with two bee-spaces, the extra layer of bees on the outside keeps up day and night the normal heat necessary for comb-building and capping. With more than the regular bee-space and no divider, the bees would, as is well known, extend the comb until, before the point of capping is reached, the space would be reduced to the regular size. Several tests were made comparing a still larger number of bee-spaces and dividers, but no additional advantage was shown, and possibly they furnished too much loafing-space for the bees. The one divider and two bee-spaces, during the past season, showed a great advantage in this method of taking comb honey.

Engravings from photos reproduced show a marked difference in favor of the Pettit system. These I would reproduce here; but for lack of time I bring it before our readers at this time, as just now is the time to fix up supers in order that the experiment may be tested.

By the old plan these outside rows of sections had to be sold at a considerably lower price; and the little expense necessary to make this experiment is so trifling that every comb-honey producer can well afford to try it, as it can be adapted to any hive or super.

In brief, Mr. Pettit's system is a scheme to

get the bees to seek the sides and ends of the hives after they come in loaded with honey, rather than to crawl up through the center of the brood-nest, thence into the center of the super. By dispensing with one row of sections Mr. Pettit uses a divider or separator perforated and bee-spaced on both sides, between the outside rows and the sides of the super. As there is only a bee-space on each side of this divider, bees will not utilize this room for building comb; but there will be a double row of bees here on each side. The consequence is, additional warmth is secured—at least, enough it is said to make it equal to the center of the super. This extra warmth, and the fact that the bees find it easier to seek the sides of the hive than the center, induces them to fill all the sections simultaneously, and to make the outside faces of the combs of the outside row of sections as perfect and as nice as those of the center comb.

Although theoretically, at least, this scheme of Mr. Pettit's seems to be good, and although it has worked well in his hands and at the experiment station, Ontario, it may not prove to be equally successful with bee-keepers at large; but nowadays, in consideration of the low price of honey, we should all grasp at every idea that promises to give us more and better honey.

EXPERIMENT IN WINTERING.

This experiment related to the advantage of having a horizontal open space through the center of the brood-nest during the winter so that, when the cluster contracts by reason of the cold, it could draw up toward the center. The experiment seems to show that a divisible brood-nest with a horizontal space between the two sets of frames allowed the bees to contract to better advantage than in a deep brood-nest made up of one set of frames. Mr. Holtermann calls attention to the fact that "as long as many bees are together they do not easily chill; but when one or more become separated they soon chill and perish. The natural direction for the bees to travel when the cluster contracts is toward its center; and it will be found that the bees which, by contraction, become detached from the main body of the cluster, perish, owing to their inability to travel around the top and bottom of the combs. With a $\frac{1}{4}$ -inch space between the two sets of combs the swarm can expand or contract without breaking the cluster, the bees passing between the two sets of frames."

Mr. Holtermann states that "an experiment will be made during the winter of 1896-'97 to test the value of winter-passages cut in ordinary combs." The experiment has now probably been made, and the results determined, but not yet published. Mr. Holtermann expresses himself as believing that "if these passages prove as advantageous as the space in the two sets of frames, they will be much more desirable."

MEDICINES FREE OF CHARGE; ELECTRO-POISE; THE AIR-SHIP, ETC.

Doubtless many of you, at least if you read the advertisements, have noticed the great number of remedies that are sent absolutely free, postage paid and all. The quantity sent is only a sample, of course, so you may see the thing really has virtue. When I first saw it I said to myself, "Why, it certainly must have something of real merit or they could never afford to send it free of charge and pay postage besides."

But to make sure of the thing I sent for a sample. The first was the wonderful "kakava." The sample received looked like dried bark or leaves of some plant. The taste of the "tea" prepared from it reminded me at once of Warner's Safe Cure. No doubt it is a preparation from the same plant. I once took about a dozen bottles of the Safe Cure, as you may remember. This kakava was warranted to have a wonderful effect on the kidneys. It would "save the trouble of getting up several times during the night," etc. I was very anxious to have the medicine succeed, and I certainly had a great amount of faith. Now may God help me to advise wisely and carefully in regard to this matter of medicines for many infirmities.

Along with the sample came, free of charge, a little box of pills. There were a dozen or more. In order to have the root do its best, the patient was to take a pill every night. I took the pill, as a matter of course. I had been troubled with constipation, as most people are who are on the lean-meat diet. The pills were certainly very good ones—that is, they were the pleasantest and mildest physic I think I ever found, and, as a matter of course, they made me feel better. The pills certainly gave at least temporary relief; but the kakava root without the pills, I honestly believe, had no effect one way or the other. Perhaps I ought to be ashamed of myself to grumble or find fault when the medicine was furnished free of charge, postage-stamps and all. I am not going to complain; in fact, I have sent them enough to pay for the medicine and the postage, because I do not want the remedy for nothing. You may say, "Why not keep on with their medicine, and why not take the physic?" Because I am sure God did not intend that his creatures should force Nature to do her work by the use of physic.

Apples are even now quite plentiful around Medina. Farmers have been bringing in some very fine ones at prices ranging from 25 to 50 cts. a bushel; and there are a few apples in the market at that price even now, this 6th day of May. All along during the spring, I thought of the apples I enjoyed so much from our own trees last fall, and tried repeatedly those offered for sale this spring. Either I am different or the apples are different, I am forced to conclude, for they did not "set" well. They made me think of the Irishman who had just eaten his first peaches. He said he liked the flavor of the fruit very well, but the "seeds" lay rather heavy on his stomach. You see the poor fellow had swallowed stones and all, not having seen peaches in the old country. Well, a few days ago a boy drove up with some remarkably fine apples, and asked me if I did not want some Belmonts.

"Belmonts?" said I in surprise. "Why, my dear young friend, the Belmont is a *fall* apple." "Yes, I know; but these were kept in cold storage. We just took them out to-day."

He then handed me one. Now, you would all think me foolish if I should tell you just

how *much* I enjoyed those Belmont apples.* I ate one, then another, and then a third one, then waited to see what Nature said. Why, they were so mellow and rich and delicious I could not believe for a moment they would distress me, and they didn't. In the afternoon I ate three more. The next day I ate half a dozen in the forenoon and half a dozen in the afternoon. Then I ate all I wanted as long as they lasted. Now, please do not call me such names as some of you called my good friend Terry when he ate so many strawberries. Nature was calling for just what my digestive apparatus and physical system in general lacked; and when she got hold of the thing she craved she just in her own way said so, and said, as well as she knew how, "Pass it along, a good lot of it." The constipation let up at once. Every thing got into natural channels, and I felt like swinging my hat and giving a big hurrah, and then using my muscles for chopping wood or doing something useful. Now then:

God did not intend us to use pills, but he did intend that we should select tender, luscious fruit, and that we should use enough of it to induce Nature to perform her appointed work with regularity and thoroughness. Since the Belmonts are gone I have tried greenings, Baldwins, russets, Ben Davis, and other apples that we are likely to find in the spring, but all of them proved to be more or less indigestible. They are something like the Irishman's peach-stones.

The cold-storage building where these apples were kept is in Wellington, Ohio. The apples were worth 15 or 20 cts. a bushel when stored last fall; but they sell now readily at 50 cts. a bushel, and we retail them on the wagon at about 75 cts. Here is an opening for fruit-growers, and here is a hint, too, for those who are in pursuit of health. I have furnished this same kind of apple to my friends and relatives who have been unable to eat ordinary apples, and their verdict is just like mine. Let us now go back to free samples of medicine.

I answered another advertisement, and got a bottle of liquid (postpaid) that tasted to me exactly like brandy and good honey shaken together. Please do not lose your respect for Uncle Amos if he tells you he found it a very nice medicine to take. Along with the medicine came a free box of something to put on chapped hands or sore feet. I found the latter very good; but the medicine, I feel quite sure, had no effect, one way or the other. If this be true, how, then, is it possible for these people to *continue* furnishing *free* samples, yes, and filling our periodicals with expensive advertisements, that they may be *permitted* to furnish

* The Belmont apple is the same thing, I believe, that is known in many localities as the "Gates" apple; and it is also very similar to what we used to call in my childhood the Golden Pippin. These latter I can remember in my grandfather's orchard. Their special characteristic was a peculiar honey sweetness just about the blossom end; and we children used to think so much of them when they were fully ripe that we devoured them core and all. How well I remember of going down cellar on a winter evening to get some Golden Pippins! Sometimes the tallow candle, held by unsteady juvenile hands, let a drop of melted grease fall on the Pippins. But that did not spoil them for the juvenile taste and appetite. Since I have grown to manhood I have procured trees and grafts of the old Golden Pippins; but of late years they are affected by a peculiar rotting at the core. The Gates (or Belmont) apples do not seem to have this infirmity; but I hardly think they are equal to the Golden Pippin. There is still another apple that, when grown to perfection, reminds me of that old Golden Pippin. It is the Vandevere.

their stuff free of charge, and postpaid besides? What is the explanation of this? Both firms I have mentioned are quoted as being worth many thousands of dollars. They are prompt and straight in their business. What is the secret of all this? How can they afford to throw away their money in this way? Why, I will tell you. If you like the medicine, and want some, it is \$2.00 a bottle, or two bottles for \$3.00. If you buy four bottles at one time they will pay the express charges to any place in the United States. They may have to give away a good many samples free without getting any thing for them; but once in a while a customer thinks he is benefited, or gets better from some cause or other, and keeps on buying. A friend of mine told me her father had used some eighteen or twenty bottles. He at first thought it was doing him good, but finally decided he was not sure it had any effect whatever. It is the old Electropoise business over again.

Take the people at large, and you will find certain impressive natures that imagine they are benefited, and hand over their money. Yes, there is a *great army* of people, perhaps, scattered through our country who stoutly insist they are greatly benefited by a humbug toy hitched to their ankles by a piece of wire. In fact, some of them are offended if you even suggest the thing has no virtue.

Providentially I have been furnished with a most overwhelming proof of the truth of my position. You have all heard more or less about the air-ship. May be some of the readers of GLEANINGS have seen it. If you have, please write and tell me about it. There certainly is an air ship sailing about the country over our cities and villages at night time, for dozens of people have seen it and are seeing it every day. Their testimony is just as plain and conclusive as that of those who use Electropoise—yes, even more so. If you have been reading the papers you have seen the testimonials, with name, place of residence, etc., signed to it. Now, the air-ship has done us some good, and it is doing good. It demonstrates that, without question, there is this queer phase in humanity. It is scattered all about; it may be in your next-door neighbor; in fact, you *yourself* may be one of the victims. Medical men and scientists had long suspected it. Electropoise confirmed this supposition. Why, bless your heart, the proprietors claim to have testimonials from a *hundred ministers of the gospel*, and religious periodicals all seem ready, or at least nearly all, to accept their silly advertisements. I have not yet learned that any ministers of the gospel have seen the air-ship. God forbid! This talk needs a brief summary. The summary is this:

Be careful, dear friend, how you let your imagination lead you into paying out good money for some worthless medicine or other trap that some worthless and swindling concern may try to push off on to you. Furthermore, be careful how you even accept samples that are furnished you free of charge. These men know what humanity is made of, and they are not wasting their postage-stamps or throwing away their money in this or any other way, you may be sure.

The people who declare they have seen the air-ship are honest, or a great part of them are honest, no doubt—at least we will try to believe they are so. Almost every town or village in our broad land furnishes one or more of these peculiar impressive people; and when the air-ship, Electropoise, or a certain patent medicine is talked about these are ready to give their testimony.



Before reaching Prescott we came down out of the mountains across quite a long level plain. This plain is called Lonesome Valley, and no wonder—not a tree, not a human habitation, not any thing except the great mountains away off in the distance. Friend Jordan told me some experiments had been made, and they felt pretty sure that sugar beets could be grown in that “lonesome” valley. They have a little rain along the latter part of the winter; and this rain, it is said, is sufficient to cause the seed to germinate; and after the plants once get down into the desert soil they will mature a crop of beets large enough, and of the best per cent of sugar, without any later rain.

There is one station in the middle of Lonesome Valley. It is called Davis; but instead of being a town or village there is not a building of any sort—not even a coalhouse. All you can see is some lumber-piles. This lumber is brought in from a sawmill away up in the mountains, too far away to be in sight. Jerome Junction has two or three buildings. Between this point and Prescott there is some very fine scenery, but none to compare with that further along. Although the turns in the railway are not quite as sharp as near Jerome, the scenery is grand and beautiful. Great rocks shoot up like needles. All you have to do is to fix your eyes on these and then watch and see how the train curves in and out around the mountains. Great mountain peaks rise up in their grandeur, and the railway seems to hover around them for an hour or two almost as if it were loath to break away from their awful presence. There was one round-topped peak that it seemed to me was in view a great part of the day. The turnings in and out, horseshoe within a horseshoe, as I described in my last, were incessant. As the weather was mild I spent the greater part of the time on the platform at the rear of the train, drinking in the wonderful scenery before me. Skull Valley I have casually mentioned before. It is so named, I presume, because of the great number of skulls and skeletons of cattle scattered for miles around. I suppose this was caused during some season when the usual amount of rain was lacking, and the vegetation of the whole country was scorched and burned up by the terrible Arizona heat. But when we got several miles away from Skull Valley, down toward Kirkland, we found what is called a “ciénega.” This is a piece of land where Nature has worked out sub irrigation, and it is just about as nicely fixed as our folks at the Experiment Station at Wooster have it in their greenhouses. It is caused by a valley or depression with an impervious subsoil, so that the water stands so near the surface of the ground that the roots of plants or farming crops will go down into it; and with the intense heat every thing just thrives wonderfully without any assistance from rain. Such tracts are found at different points all through California, and occasionally in Arizona. At one point near Tempe the ground became so wet from frequent irrigation that water stood on it the year round, and no crops could be raised until some deep canals were cut through to let off the surplus. This surplus was used for irrigating other grounds at a lower level. I climbed down into one of these canals, and saw the water coming out of the gravel like a beautiful spring.

A little further down below this cienega a river takes its source. The name of this river is the Hassayampa. I presume this is an Indian name. Most of the mountains, rivers, and even towns in this locality, are called by Indian names, and I am glad of it too—if for nothing else, to keep in memory the existence of the red man. Well, there is an ancient Indian tradition that whoever drinks of the Hassayampa River can *never* tell the truth again afterward. Some of my friends cautioned me, and declared that they had known people who had drank of this water who could not tell the truth, even when they *tried* to; and I am really afraid I have seen a few people affected this way who never even *saw* the beautiful Hassayampa. Now, I pledge my word and honor, dear readers, that I did not taste a drop of that magical water. I stood on the car platform and watched the river in its windings; admired the gorgeously painted cliffs and beautiful scenery all along its tortuous course; but I did not drink any, because—I did not have a chance.

In passing through these deserts and over these mountains, for the most part so uninhabited, one begins to wonder if people can really live and be happy amid such wastes; but when it comes dinner time, and the train slows up beside some unpretentious building or dining-station, you look about you in surprise to see a well-spread table, with roast turkey, and vegetables and fruits to match, almost in keeping with a city restaurant. Yes, there are neatly dressed obliging women to wait on you besides, and the price of the dinner is not extravagant either.

I was so much interested in the wonderful things about Jerome a good many told me I would have to visit Congress; but I decided that *one* gold-mining town was enough for me. I was considerably interested, however, in a white-looking village off from the railroad a piece, up in a mountain canyon, which I was told was called Fools Gulch. It puzzled me at first to know whether it was really a village or a cluster of wigwams made of cotton sheeting. I am told they have there all sorts of dwellings unless, may be, it is a three-story brick. The houses are of all sorts and sizes, but they are mostly made of cotton cloth. Even the "Grand Hotel" has no cover, or walls either, thicker or more expensive than sheeting.

All around in this locality the one topic is mining. A man got on the train at a little station. As he was a resident of the vicinity I asked him some questions, and the subject of bees came up. He said his business was that of recovering gold from the ores by what is called the "cyanide" process. I believe he had an invention along that line. He said when he first built his vats in the open air, to hold the cyanide solution, the wild bees came in great numbers to the vats because the vats made such a convenient place for drink. In the desert, bees go miles for water. The cyanide, as you know, is a deadly poison. Said he:

"Now, stranger, you may not believe it; but when I saw I was going to poison all the bees in the country I felt a good deal troubled. Pretty soon, however, they seemed to 'catch on' to the fact that every one of their comrades that drank at those vats soon turned up his toes. In my work I have just *one* vat of pure water, and the bees in a very few days abandoned the cyanide-vats entirely, and now they drink regularly, thousands of them, at the vat containing pure water, and nowhere else."

Now, you need not suggest that this man had been drinking of the waters of that enchanted stream. I think he told the truth, but

I rather suspect his deductions were not exactly correct. The bees probably discovered that cyanide is not very palatable, and so settled down finally to the vat of pure water, just as they choose a drinking-place where *salt* water is furnished, rather than the other kind.

At just about sundown the train drew up at the station of Phoenix. I pumped up my wheel, and was soon flying over the limestone road where I started out before daylight just two weeks before that. My brother's folks were rejoiced to see me, tanned up like an Indian. The allotted time for my vacation was up, and I very soon hustled back to old Medina, arriving exactly in the *middle of January*, and you know how it turned out.

OUR HOMES.

Inasmuch as ye did it not to one of the least of these, ye did it not to me.—MATT. 25:45.

Dear friends, I suppose you have all read more or less in the papers in regard to the starving millions in India. Yes, it is *millions* who will doubtless starve unless they have aid. There are some people who will say, I presume, "Well, what is that to us?" "We have all we can do to take care of our own people," etc. But here lies the difference between Christianity and no Christianity. The gospel of Christ Jesus admonishes us to love our neighbor as *ourselves*; and it further teaches us by that beautiful parable that our neighbor is anybody who is in want—starving, if you choose. Even though he may be on the opposite side of the globe, he is our neighbor still. It has been estimated, and generally published, that a dollar of our money will, as a rule, carry one of those starving people through the season so as to save his life, in all probability. There are something like three and a half millions who will be likely to starve unless they have help. Three and a half millions of dollars would save them. That is an awful big sum to send away to starving heathen, as some term it, I know; but we have single individuals in this country who alone are worth enough; at least they have control of sufficient funds to do the work. I can not refrain from adding, "More's the pity." This expression may not be good grammar, and it may be slangy, but it expresses the matter. From my point of view it does not seem as if one person ought to control such an amount of money. Never mind; we are not going to discuss political economy or social economy just now. Let us give nourishment to the starving millions, and settle the other questions afterward. Of course, we are not called upon to perform impossibilities. We are not expected to starve or neglect our own children in the effort to feed those in that far-off country; but it does seem to me that God calls on each and every one of us to be careful about extravagance and luxury.* In our town it is quite fashionable to have various kinds of socials and clubs and gatherings in the evening, and they have expensive suppers and banquets. I have never attended more than one or two of these. In Rootville we all have a good supper at home, every night the year round, and I *always* thank God for my part of it, not only in words when I ask a blessing at

*Since the above was in type I have found the following in a recent number of the Chicago *Advance*: "In view of the woes and adversities of the poor, no condemnation can be too severe for those rich men who make needless ostentation of their wealth, no matter how honestly gained."

the table, but from the bottom of my heart. I am well and strong now, and enjoy my daily food; but I do think it is wicked to get up expensive suppers, and more wicked still to partake of them *after* we have had a good one at home. I would save the money that these suppers cost, and give it to starving India. Why, one's *conscience* ought to keep him awake nights, even if the unwholesome food at an unreasonable hour does not do it. The saddest part of this whole foolish fashion or craze is that it is mostly done by *Christian people*. Yes, our churches—a great part of them—seem to encourage and foster this feeding of people who have already been *well* fed. The laws of health and the laws of God should protest against it.

Now, this is only *one* of the things that occur to me that we might cut off in order to save suffering and avoid the loss of life. There are things we do not need—things we should be better off without—that most of us are paying money for. We profess to be followers of Christ Jesus; and in our text he himself makes the startling statement that when we are leaving these people to suffer and die for want of food we are leaving *him* to suffer and die. Humanity nailed him to the cross, even after he left his heavenly home, and came to save a suffering and sinful world. We of this age claim we have nothing to do with this act of his crucifixion; but if we leave these people to starve while we are ruining our health in consequence of the great plenty around and in our homes we are neglecting and ignoring the very first principles of Christianity. Our own government, in a Christianlike manner, has agreed to move 4000 tons of corn or other food from New York to India, free of charge; and this makes me feel glad, because in it there is a glimpse that, with all our faults, we are in some respects a Christian nation. The *Christian Herald*, 160 Bible House, New York, seems to be pushing this matter with more vigor than anybody else. T. Dewitt Talmage is in the field, and seems to be taking the lead, and appeals are coming through all the papers.

And now, dear friends, for humanity's sake and for Christ's sake shall we not each and all of us look about us and see what we can spare, and that, too, without very seriously depriving ourselves, that we may help just a little poor famine-stricken India? A human life for only one dollar, or a dollar's worth of something you have to spare!

And that is not all. Jesus' ministry was not altogether preaching. He healed the sick and fed the hungry. America has the greatest opportunity to heal the sick and feed the hungry, perhaps, she ever enjoyed. Corn and other food supplies are in such great abundance that the prices offered hardly pay the cost of production. Our missionaries are on hand already organized, and prepared to feed the starving. There is an opportunity before them such as the world never saw before to gain the confidence of the heathen, to glorify the God of our fathers, and to proclaim the gospel of Jesus Christ to all these ignorant and benighted people. A few days ago Rev. W. E. Rambo was here on a visit from the famine-stricken region. He looked over my high-pressure gardening, and said something like this:

"Mr. Root, your high-pressure gardening is the thing of all things that is needed in India to ward off these terrible famines. If these people knew—if they were once taught—how much good nourishing food can be grown on a little patch of ground, our famines would be ended. They need to have reservoirs to store up the water in time of floods. They need

irrigating-canals to spread the water over the ground. They need to be taught *intensive* gardening."

Now, these people have been backward in accepting our teachings. In China they tore up their one railroad and demolished the locomotives, and, if I am correct, these very locomotives might have saved most of them from starving a few months later on. Now is our opportunity to *teach* and *preach* successfully. That you may not think I am talking about something that does not come within the province of bee-keepers, permit me to submit the letter below from a constant reader of GLEANINGS:

A LETTER FROM A READER IN STARVING INDIA.

GLEANINGS has been sent to me for years. I can not forbear writing you a few words as to the sad times that have fallen on India in these last days. Plague on the west of the peninsula and famine over at least one-third of this empire of 300 millions. The plague has done no such damage to life as the famine, but it has caused untold damage to business, and has carried away about 15,000 lives. Three-fourths of all the cases that have been smitten with the disease have died, and all medical skill seems so far of little use. By famine, already in the last few months about 200,000 have perished of hunger, and at the present time about three and a quarter millions of persons are being fed on famine-relief funds. Of these, one in five is in a state of helplessness, and is in what are termed hospital camps. The famine is not at its worst, in these parts; but the distress is now closing down on the poor, and the next few months are full of dread for thousands about us. We are in a forest part of the country, and the forest produce has kept the people on a kind of food, that answers for the time, some six months longer than the people in the open country could pull on for. Now, even this is fast coming to an end. Many in the villages about us are now living on exactly what the wild swine do—that is, on roots, wild yams, berries, flowers, herbs, etc.

Recently I felt that I could not vary to do something for the poor near by, and so, on a village that I secured for the mission a few years back, I marked out some work in the shape of a dam for the storage of water when the rain comes, and gave a lot of the poor work at very low rates—\$1.00 per 1000 c. ft. I had no funds; but a friend lent me some, and about 100 people are at work. They represent families that number perhaps 500 souls. The work will give about \$1000 in work, and help to pull through, to the time of the expected rains, 1000 souls. We get our regular rains in June; and the thought that rain may not come then is too terrible to contemplate.

All the seed grain has been eaten up; and when rain comes the condition of the people is one of great helplessness. They must be helped then. When I saw your note to-day I thought that some of the bee-men of America might be moved with pity for the distressed of this land, and that you might put some note in your journal that would give them a chance to send them something through you. It may seem incredible, but millions will not get one dollar's worth of food per person in the next three months, and yet will live; \$500 will help us to keep 500 souls here out of the reach of starvation for the next three months.

I have read for years in GLEANINGS what leads me to think that you are Christian men, and thus dare to hope that this plea for the poor heathen of India will not fall on unsympathetic ears, though this writer be an utter stranger.

□ I have been over 20 years a Methodist missionary here in India, and expect to spend all my remaining days here in the Master's work.

I am an Illinoisian by birth, and all my people still live near Bloomington, Ill. My family are at present in Wheaton, Ill. My wife left India, broken down, in '94, and I expect her and the children back here this year. If you wish an reference to satisfy you as to who I am, I will refer you to Richard Grant, Esq., 181 Hudson Street, New York, or Anderson Fowler, Esq., Produce Exchange, New York. Twenty years have I given to the Lord's work in this land, without salary from any missionary society. I have trusted the Lord and his peo-

ple, and what the Lord has sent me; and what I have been able to earn has supported me and mine, and a great deal of work for the Lord. To this sort of work and life my wife and I are pledged.

In closing, let me ask you to continue GLEANINGS. And if the Lord move your sympathies on behalf of the suffering here, I hope you will speak the word to your friends through your journal, and pray that some help may come through you to the suffering here. *I am not in need, nor are my Christians; but the poor heathen, who know not God to cry to, need your prayers and sympathy. God is full of mercy, and these famine and plague voices are his, and as full of mercy as any ever sent to the perishing.*

C. B. WARD.

Yellandu, Nizam's Dominions, India, Mar. 25.

Let us now come back to our country, and read a letter from a brother bee-keeper who seems to preserve a very cheerful spirit, even although he has had terrible trials and losses:

A SAD STORY FROM ONE OF OUR BEE-KEEPERS WHO HAS SUFFERED FROM THE FLOOD.

Friend A. I. Root:—I am sitting in our humble domicile, not able to leave our door unless we go in a boat. Our stock is standing on the levee, in front, fighting the buffalo gnats; the younger of the family out there trying to keep the gnats from killing horses and cows; the water at our door is 28 inches deep. What bees we saved, some 30 colonies, are up on stilts, hurriedly made when the levee broke some five miles north of us. We lost some 200 head of hogs, but have saved horses and milch cows so far, though they are getting very poor. We feed them all we can; but being about out of feed, we are cutting and boating to them green willow and cottonwood to try to save them. The river is falling a little, but very slowly—about one or two inches in 24 hours. It looks very dark about making any crops in this vicinity. The levee is crowded with horses, mules, cattle, and negroes, driven from their homes by the worst flood we ever had.

I said the water is 28 inches deep in our dooryard; but it is much deeper in most of the town. On the main street, on which are the court-house, postoffice, and most business houses, it is from 5 to 8 feet deep. All business is suspended; no trains here in 25 days. The levee broke on the last day of March, and we were flooded in a few hours. I saw Mr. Diver, and he tells me he lost all his bees, as did Sykes at Gunnison, 8 miles north of us. When our bees swarm, wch ich they have been doing, we have to let them go—can't save them. This is a gloomy picture, but not nearly as bad as it actually is.

There have been several persons drowned, and a great amount of stock; in fact, the stock are still dying fast after being gotten out on scaffolds and the levees. I guess there are 200 or 300 head dead within less than a mile of Rosedale; and, to make matters worse, they have the measles among the people, and some are dying from that cause. I have received but one copy of GLEANINGS since the water got us.

R. J. MATHEWS.

Rosedale, Miss., April 26.



CULTIVATING PLANTS AND CULTIVATING BOYS.

Right over in the greenhouse across the way I noticed yesterday, April 27, a good-sized bed of Earliest in the World tomatoes that were getting crowded. In fact, the whole seemed all at once to have got to the point where they were discussing "who should be tallest." With the present fine weather they would be two or three inches taller than I want them, in 24 hours or less. They must be moved. Fred and Frank were busy filling orders for potatoes and other stuff that had to go at once. Mr. Green was superintending the boys planting half an acre of strawberries. I felt as if I could not

have those tomato-plants in that rich soil one day longer.

Pretty soon school was out, and three bright earnest boys were ready for a "job." There was a bed already made, ground fined up and nicely leveled off, and even marked for the plants, 7 inches apart from center to center. The boys would take up the plants and set them out in the bed, without any question, if I asked them to do so, *without* any instruction; but they would get the dirt all off the roots, and would probably make other blunders, and my beautiful early plants, growing so nicely, would be injured, and many of them killed. If I could be with them for fifteen or twenty minutes I was pretty sure they would do it almost if not quite as well as some expert men. The boys were from thirteen to fifteen years of age. I called them.

"Here, Carl, you get every thing ready to put out those tomatoes. Have a couple of bars to stand on; and here, Clyde, you take the hoe-handle dibble* and make the holes just large enough for the plants that Carl is going to set out; and, Clare, you come with me. Bring along two trays and a trowel." Clare has not had as much experience in gardening as the other two, but he is a skillful boy when he knows what he wants.

I showed him how much water to give the plants, where to place his tray, how to handle his trowel, and then held up a plant with a ball of rich black soil hanging to it, say as large as a good-sized hen's-egg. I took up three or four, placed them on the tray, tops all one way, and told him to try it. He soon had a dozen on the tray very nicely. Then I called Clyde to take the tray over to Carl. Carl lifted the plants so carefully that little if any of the dirt tumbled off—set them down in the holes widened out with the hoe handle dibble, and pressed the earth close around them. When he had got out the dozen, Clyde carried back the empty tray and swapped it for a filled one. While he was gone I carried the hose over to where Carl was putting the plants in, and opened the valve just so as to give a small stream. Then Carl let enough on to each plant, without wetting the foliage, to get the roots well soaked. After I had instructed each boy just how to work I watched them for five or ten minutes and knew they would do it all right. In two hours over 500 plants that were crowding and struggling for more daylight were put outdoors and moved from three inches apart to seven. As fast as Carl got a row of plants in, one of the light board shutters was laid over them, and moved along so as to cut off the sun. The plants stand up this morning, April 28, just as proudly and gracefully as they did in the greenhouse; and, shaded by the shutters during the heat of the day, I do not expect a leaf to wither or even scarcely to droop.

Now, friends, when plant-raising can be made to go along like clockwork, and have all the plants live, it is one of the nicest things to work at in the world. But when you do your work bunglingly, and have failure after failure, I do

*I will explain that our hoe-handle dibbles are made from any hoe that gets broken off at the shank. We have the blacksmith heat up the shank and draw it down to a blunt point. While doing this he keeps the handle of the hoe wet so it will not burn; then it is finished up with a file or emery wheel, and kept polished and bright. Instead of having to stoop over, as you do with short handled dibbles, the operator stands upright, and makes the holes almost as fast as he can walk along. In using this dibble in our plant-beds (rolling it as it goes down) the operator stands on one of the wooden bars laid across the bed, for we never set foot on the ground in the beds at all.

not wonder that people call growing plants a puttering small business, and want to get out of it.

There, I declare! I almost forgot my heading. While you are succeeding with the plants you are also succeeding in training the boys. The boy who can successfully perform the operations I have described, and have his plants *all grow*, is pretty well fitted to do other important business in life. For instance, without the careful instruction I gave them they would probably have taken the plants out of the greenhouse, without watering, and rattled all the dirt off. They would have laid them on a tray or in a basket with the delicate tender tops bent or broken. In watering, if I had not cautioned them and showed them how to do it they would have turned on a flood of water and washed out the plants and knocked them over, besides spattering their clothes and making the paths a sloppy muddy place. As it was, they did not soil their clothing nor the plants. I like to see plants grow and thrive; but, dear friends, I hope I am speaking truthfully when I say I try to recognize every day and every hour that it is of a thousand times more importance that these boys should grow up careful, trustworthy, successful, obedient boys than it is to grow the finest fruit or vegetables that the world ever saw. God gave us the fruits and the vegetables, and they are indeed a precious gift; but Christ Jesus himself came down from his home in heaven, into this world, and lived—yes, *died*—that the boys might have *life* eternal.

THAT "EARLIEST" STRAWBERRY.

A few weeks ago I spoke about the above strawberry, and alluded to the fact that it was putting out blossoms before any other we have on our grounds, say a week or ten days earlier than Michel's Early, Rio, or any other of the extra earlies. As soon as Mr. E. C. Green saw it he said I would find it had the same fault as Michel's Early—that it makes a great swamp of plants but bears very few berries. Pointing to one of the plants he remarked:

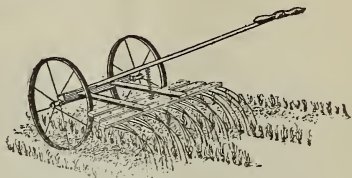
"There, you see those runners coming out already along with your extra-early blossoms."

The plant now has runners a foot long; but each and every plant seems to have stopped the blossom business, and commenced putting its energies into runners. Very likely this is a fault of most of the extra earlies.

THE BREED WEEDER AFTER HEAVY RAINS.

After having written my enthusiastic notice on page 353, last issue, we had a heavy soaking rain which settled our clay soil down so solid that it threw the weeder out for some days. Before the soil was really fit to run the weeder again, we had a rain lasting three or four days; and now the weeds have got such a start that we are obliged to use the cultivators instead—at least until we get the ground fined up once more in proper condition to use the weeder. At the time I wrote I had a little misgiving, and therefore I used the expression, "This morning I feel like calling the Breed weeder the greatest invention," etc. We can with some trouble get the ground in proper order to use the weeder again; and on certain soil, say on muck land or sandy ground, the weeder can be used almost as soon as it stops raining. Our ground is very thoroughly underdrained; but notwithstanding this it takes some time for the water to get away; and after a *heavy* rain it is apt to leave a crust that the weeder can hardly break up. Where we have made heavy applications of stable manure season after season this remedies the defect in a great measure.

Below we give you a cut of the Breed weeder, made especially for onions and other small stuff where there is not room for a horse between the rows.



BREED WEEDER FOR ONIONS, ETC.

We use the above mostly with two boys. One of the boys pushes, and the other pulls on a small cord hitched to the front. This cord he puts under his arms and over his neck so the draft comes just a little above the waist. Both boys either straddle a row of the plants or else go between the rows. They are expected to keep the wheels and their feet off the plants. Where the onions are of proper size we run crosswise of the rows as well as lengthwise. In this case the wheels bend a few plants over; but the harm this does is more than counterbalanced by the more perfect pulverizing we get. Where we use boy power instead of horse power these weeder can be run crosswise on all sorts of crops as well as lengthwise. Good results are obtained by going crosswise at one time of cultivating, and lengthwise the next.

"EARLIEST IN THE WORLD" TOMATO.

We clip the following from *Horticulture* for March:

I have just inspected a patch of the "Earliest in the World" tomato, in the garden of an acquaintance in Ontario County, N. Y. It was asight indeed. All plants were trained to a stake, and trimmed to one stalk each. There were immense clusters, from five to seven specimens in a cluster, all of good, singularly uniform size, and as smooth as an apple, not a wrinkle to be seen in any of them, and evenly colored. My friend claims to have left the specimens unpicked, on some of the plants, until about half of the crop had become fully ripe, and then to have picked as much as half a bushel of perfect ripe fruit from one plant, leaving about as much green fruit on to mature later. This would prove unusually good keeping qualities, too. The plants were seven feet high and upward. Of course, we can train any tomato up like that. When all the growth is forced into a single stem, on rich ground, we can run the plants up 10 or 12 feet high easily enough. From the great thrift of the plants in my friend's patch, I infer that growth has been stimulated by heavy manuring, possibly with liquid manure, and that this treatment may possibly account for the remarkably fine fruit and the great productiveness of the plants. It points out a way how to get fine tomatoes, and plenty of them.

Half a bushel from one tomato-plant, of perfect ripe fruit, is a pretty big story; but I shouldn't wonder if we gathered a good half-bushel from some single plants on our grounds last year, and they were left to sprawl about just as they chose. I was astonished to see so many tomatoes, each and every one "as smooth as an apple." While reading the above it made me feel glad to think we have a tremendous big planting in our plant-beds, of this same variety, both once and twice transplanted. We also have plenty of seed of our own saving, for those who care to plant the seed as late as this. Very nice tomatoes may be grown even now by planting the seeds in the open ground.

KILLING APPLE-TREE BORERS WITH BISULPHIDE OF CARBON.

Bisulphide of carbon will surely kill trees if applied to them. Prof. Stedman, entomologist of the Missouri Agricultural Experiment Station, at Co-

lumbia, Mo., and also Judge Willkerson, horticulturist of this State, made repeated experiments of injecting bisulphide of carbon in the ground around the roots of apple-trees for the purpose of destroying the root-louse, or woolly aphis, and in every case where the bisulphide came in contact with the roots of the trees they were killed.

A full report of these experiments is contained in Bulletin No. 35 of Missouri Experiment Station. I enclose a clipping from Prof. Stedman in regard to keeping borers out of fruit-trees. These wooden wraps are made to encircle the tree, and are for sale by a St. Louis firm who deal in berry-box material. Wm. H. COMBS.

Will you give a subscriber whose orchard is infested with borers a way to keep trees from the attack of this destructive enemy? J. A. H.

Marshfield, Mo.

REPLY BY PROF. STEDMAN, COLUMBIA.

There are two well-known methods by means of which one may prevent a large percentage of the injury from apple-tree and peach tree borers. The first (and for some reason the best) method is to surround the base of the tree with a wrapper of some sort. For this purpose a common newspaper is frequently used; but where wire mosquito-netting is too expensive one would do better to purchase common wooden wrappers that can be obtained for about \$3.00 per 1000. These should be loosely placed around the tree, and pushed into the earth just enough to prevent the insects from crawling under; and the tops should be closed up with cotton to prevent the adults from crawling down between the wrapper and trunk of the tree. These wrappers will also prevent rabbits from injuring the trees. The wrapper should be about eighteen inches high.

The other method is to apply a wash to the trunk of the tree. This wash is to contain some substance that is unpleasant to the insect and will cause it to seek trees not so treated. For this purpose carbolic acid is more often used, and the wash varies in the other ingredients. The simpler the wash, however, the better in most cases. A good wash is made as follows: Two ounces of crude carbolic acid is placed in one bucket of water, and one-half pound of sulphate of iron dissolved, and the whole thickened with lime to make a thick whitewash. This is applied to the trunks of the trees by means of a whitewash brush, and is usually effective when so used in the spring, and again later in the summer or early fall.

THE CRANDALL "TREE" CURRANT.

I paid Frank Ford one dollar for one root of the above currant the first year he sold them. Late in the season I was at his place at Ravenna, Ohio, and saw his bearing bushes. They were all he represented as to prolific bearing. As it was necessary for me to move my bush several times it never had a fair chance; but one or two years it has had a fairly good crop. As to the "tree" part, it is no more a tree style than any other currant or gooseberry bush, only as it is trimmed to represent a tree.

THE JAPANESE MAYBERRY, THE STRAWBERRY-RASPBERRY, AND THE LOGAN OR RASPBERRY-BLACKBERRY.

I got some of each of the above last spring. All were very small, in two-inch pots. Of the four strawberry-raspberry, all lived and made a good growth; one set two blossoms in August. One blossom amounted to "nix," the other set and matured one seed. They have come up very thickly this spring, each original plant filling a space of two feet in diameter. One entire plant I dug up and divided into 125. They sucker from the roots, like the red raspberry, and very freely too. My three Golden Mayberries grew to average about 15 inches high, and quite branchy, but winter killed about to the ground, but are sprouting nicely now.

My one Logan made one branch 6 feet, and one 4 feet, the tips of which I put into the ground.

I will give reports on all next fall.

Brooklyn, O., Apr. 19.

A. A. FRADENBURG.

A GOOD WORD FOR THE WHITTAKER ONIONS.

The White Multiplier onions, set last fall, were almost a failure—only two or three surviving, set same time and manner with my common potato

onion. The winter was very hard on onions, however, the very warm autumn bringing them up to 6 or 10 inches in height; then the January freeze, down to 16 degrees below zero, took them. I expect to lose all. The Whittaker, however, stood the test, and are the best-looking onions I have.

Rugby, Tenn.

M. S. PERCIVAL.

The Whittaker onions have wintered again with us the best of any we have ever had except the winter Egyptian. Our stand this spring is regular and complete; and they make the largest onion early in the season (far ahead of the American Pearl in size) of any we have ever got hold of. Your experience points a caution. If onions to be wintered over outdoors make too strong and rank a growth they may not winter as well as those planted later. With us the best time for American Pearl, Whittaker, and White Multiplier seems to be just about the time farmers are sowing wheat, or, say, with the late sowing of wheat.

NEBRASKA CORN, MUSHROOMS, ETC.

Our Homes is read with much interest, and also your travels and Ernest's. In April 15th issue it seems you do not exactly understand our western way of corn bushels: 56 lbs. of actual corn is a bushel if it is shelled; in early gathering (before the corn is dry), 80 lbs., cob and all; later, as the corn and cob become dryer, 75 lbs. per bushel; and after about Christmas it is called seasoned; and from that on to 70 lbs., cob and corn go as a bushel. Our to-day's market here is, corn, 17 cts.; oats, 15; hogs, \$3.75 to \$3.80; but the cholera took nearly all last fall and winter, and so the corn must be sold at some price. The winter has killed most of the wheat. There will not be nearly enough this year to seed us.

I think if you were here I could feed you on mushrooms that are not poisonous. They are not the shape of a toadstool, but more like a corncob, point end up; in length from 1½ to 5 inches, and diameter ½ to 3 inches. They grow under or near dying apple or oak trees. Yesterday I picked 80 on less area than 16 feet in circumference, under one tree.

Cuba, Ill., May 4.

M. W. MURPHEY.

Health Notes.

WHEAT FLOUR CONTAINING A LITTLE RYE, ETC.

Your Notes of Travel are very interesting to me, especially those from the thinly settled country through which I have been traveling. We find but few places for any distance without some settlers far or near. What surprised me the most of any thing all over the Rocky Mountains is how they make their living. In some places indeed it is a mystery until you get acquainted with their occupation. Of course they live more simply, with fewer luxuries and less high style than is fashionable in thickly settled places. Their common food, as a rule, keeps them in good health and spirits, while we live too finely and luxuriously, as well in food as in clothing.

This cracked wheat surely beats the lean meat and hot water all to smash. I believe a little rye mixed with the wheat will make it still better for many people. The other day I rode on the cars with a baker. In our conversation I told him that I had about 400 bushels of wheat, with a little volunteer rye in it, which is rejected by wheat-buyers. I got part of it ground for flour, which we use for our family. We like it better than clear wheat. This baker will buy all I can spare. He told me he had regular customers for such bread—those who are costive naturally—and this bread regulates their system.

Theilmanton, Minn.

C. THEILMANN.

Friend T., no doubt the cracked wheat and rye will do very well with many people, without the necessity of lean meat; but where one is badly out of health I would advise him to adopt the lean-meat diet, using just enough of the cracked wheat or rye, or both, to avoid the ne-